UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

S-6J

William D. Jarosz
President
The Fansteel Corporation
One Tantalum Place
North Chicago, Illinois 60064

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Re: Fansteel, Inc.; Operable Unit #2
Vulcan Louisville Smelting Company Site
ILD#097271563; Site Spill ID# B5H7

Dear Mr. Jarosz:

Enclosed please find a unilateral Administrative Order issued by the U.S. Environmental Protection Agency (U.S. EPA) under Section 106 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (CERCLA), 42 U.S.C. §9601, et seq.

Please note that the Order allows an opportunity for a conference if requested within three (3) business days after issuance of the Order, or if no conference is requested, an opportunity to submit comments within seven (7) business days of issuance of the Order.

If you have any questions regarding the Order, feel free to contact Tom Krueger, Assistant Regional Counsel, at (312) 886-0562 or John O'Grady, Remedial Project Manager, at (312) 886-1477.

Sincerely yours,

for William E. Muno, Director
Superfund Division

Enclosure

cc: Peter Sorensen, Illinois EPA
E. Jonathan Jackson, Mgr, Environmental Affairs
Michael J. Mocniak, Vice President, General Counsel, and Secretary

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 5

IN THE MATTER OF:	)	Docket No. V-W [illegible]
	)	
FANSTEEL, INC.	)	ADMINISTRATIVE ORDER
	)	PURSUANT TO SECTION 106(a)
	)	OF THE COMPREHENSIVE
	)	ENVIRONMENTAL RESPONSE,
Respondent:	)	COMPENSATION, AND
	)	LIABILITY ACT OF 1980,
	)	AS AMENDED, 42 U.S.C.
	)	§9606(a)

I. JURISDICTION AND GENERAL PROVISIONS

This Order is issued pursuant to the authority vested in the President of the United States by Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. §9606(a), and delegated to the Administrator of the United States Environmental Protection Agency ("U.S. EPA") by Executive Order No. 12580, January 23, 1987, 52 Federal Register 2923, and further delegated to the Regional Administrators by U.S. EPA Delegation Nos. 14-14-A and 14-14-B, and to the Director, Superfund Division, Region 5, by Regional Delegation Nos. 14-14-A and 14-14-B.

This Order pertains to property located at One Tantalum Place, North Chicago, Illinois, which is a portion of the Vacant Lot Site and/or appears to be contributing to contamination at the Vacant Lot Site (the "Vacant Lot Site" or the "Site"). This Order requires the Respondent to conduct removal activities described herein to abate an imminent and substantial endangerment to the public health, welfare or the environment that may be presented by the actual or threatened release of hazardous substances at or from the Site.

U.S. EPA has notified the State of Illinois of this action pursuant to Section 106(a) of CERCLA, 42 U.S.C. §9606(a).

II. PARTIES BOUND

This Order applies to and is binding upon Respondent and Respondent's receivers, trustees, successors and assigns. Any change in ownership or corporate status of Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter such Respondent's responsibilities under this Order.

Respondent shall ensure that its contractors, subcontractors, and representatives comply with this Order. Respondent shall be responsible for any noncompliance.

III. FINDINGS OF FACT

Based on available information, including the Administrative Record in this matter, U.S. EPA hereby finds that:

1. The Vacant Lot Site, as initially defined, was a 6.4-acre parcel located in North Chicago, Lake County, Illinois. This parcel is bordered on the north by elevated tracks of Elgin, Joliet & Eastern Railroad, on the east by Fansteel, on the south by Martin Luther King Drive and on the west by Commonwealth Avenue. The Site is depicted in Attachment B.

2. The Site posed easy access through its unfenced west boundary and northeast corner of the Site, as well as through gaps in the existing fences. An access road made of gravel or badly weathered concrete pavement originated at the south end of the Site and proceeded north through approximately three-fourths of the Site length. The southern two-thirds of the Site had a weathered concrete/gravel layer, under approximately 6 inches of top soil. Several areas of the northwest one-third portion of the Site had deposits of slag, ash, and cinders.

3. The Site is transected by Pettibone Creek, an intermittent water body that lies in a relatively steep-sided ravine, and originates at the northwest boundary of the Site. The Creek flows to the south on Site, and then flows east to finally merge into Lake Michigan (approximately 1.5 miles from the Site). The Creek, at its origin, receives water through the North Chicago Stormwater discharge and a ditch. The Creek is also fed by rain water and outfalls from two nearby facilities (EMCO and Fansteel). As such, the Creek, within the Site premises, contains water only during rain, Stormwater, or industrial discharge events.

4. People reportedly used the Site as a throughway since it is located in an area of businesses and nearby residences. There was evidence (trash) that the Site was being used by nearby residents to visit the creek area. A local authority also stated that the Site was sometimes inhabited by homeless people.

5. U.S. EPA conducted an Engineering Evaluation/Cost Analysis ("EE/CA") for the 6.4 acre parcel at the Site. The EE/CA Report identified contamination at levels of concern, including: elevated concentrations of lead in soil (>1,400 milligrams per kilogram ("mg/kg")) at depths up to 2 feet across the entire area; a primary source area with soils contaminated with tetrachloroethene (PERC) to a 4-foot depth (at levels up to 170 mg/kg) and lead contamination to a 9-foot depth (1,700 mg/kg); an

area where soils were contaminated with polychlorinated biphenyls (PCBs) at levels greater than 50 mg/kg to a 9-foot depth; lead and copper above the "severe effects level" (at levels up to 1,550 mg/kg and 3,100 mg/kg, respectively) and benzo(a)pyrene contamination (at levels up to 13 mg/kg) in sediments throughout the entire creekbed, to depths ranging from 2 to 6 feet;

6. On May 6, 1998, U.S. EPA issued an Action Memorandum selecting the following response activities: securing the Site and excavating and disposing of contaminated soils in excess of removal cleanup standards. The Action Memorandum was revised on September 15, 1998, to include excavation and disposal of contaminated sediments in Pettibone Creek. Removal action objectives were developed for those areas of the Site which were determined to exceed a risk of 1 x 10-5, a Hazard Index of 1, or for those areas which have a high potential to release contaminants to the environment.

7. U.S. EPA completed these response activities in May, 1999. U.S. EPA removed and disposed of approximately 45,000 tons of contaminated soil and sediment.

8. The EE/CA also identified several different and distinctive groundwater-contaminated areas on the Site. Groundwater in the northern one-third area of the Site was contaminated with manganese, 1,2-DCE, and TCE. TCE concentrations are above Removal Action Levels established in the EE/CA Report, and 1,1-dichlorethene concentrations above Maximum Contaminant Limits (MCLs) were detected in the north and northeastern perimeter Geoprobe water samples.

9. Because TCE was not detected in soils on the northern portion of the 6.4 acre parcel, the EE/CA Report concluded that the TCE contamination originated from an adjacent parcel. Because ground water flows in a westerly direction, the EE/CA Report concluded that the TCE contamination originated on Fansteel's property. RCRA closure records for Fansteel's property indicate waste management and disposal occurred in this vicinity and that in a tank area soil contamination extended to a depth of up to 20 feet.

10. The EE/CA report and the Action Memorandum determined that groundwater response activities at the Site should be deferred until the TCE source area was investigated further.

11. The EE/CA Report concluded that releases from the TCE source area had become commingled and connected with other releases at the Site. As a result, the Action Memorandum concluded that further information concerning the nature and extent of groundwater contamination and source(s) to the east of the 6.4 acre parcel would need to be developed before appropriate Site-wide alternatives for groundwater remediation could be evaluated.

12. Under CERCLA, the definition of "facility" expands to encompass the extent of the releases of concern.

13. On June 17, 1997, U.S. EPA issued a notice letter to Fansteel, Inc. requesting that it conduct an EE/CA to further investigate the nature and extent of sediment and groundwater contamination on its property adjacent to the area addressed in the first EE/CA at the Site.

IV. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set forth above, and the Administrative Record supporting these removal actions, U.S. EPA determines that:

1. The Vacant Lot Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. §9601(9).

2. TCE and manganese are "hazardous substances" as defined by Section 101(14) of CERCLA, 42 U.S.C. §9601(14).

3. Respondent is a "person" as defined by Section 101(21)of CERCLA, 42 U.S.C. §9601(21).

4. Respondent Fansteel Corporation is the present "owner" and "operator" of a portion of the Vacant Lot Site, as defined by Section 101(20) of CERCLA, 42 U.S.C. §9601(20). Respondent is therefore a liable person under Section 107(a) of CERCLA, 42 U.S.C. §9607(a).

5. The conditions described in the Findings of Fact above constitute an actual or threatened "release" into the "environment" as defined by Sections 101(8) and (22) of CERCLA, 42 U.S.C. §§9601(8) and (22).

6. The conditions present at the Site constitute a threat to public health, welfare, or the environment based upon the factors set forth in Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan, as amended ("NCP"), 40 CFR Part 300. These factors include, but are not limited to, the following:

a. Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants or contaminants; this factor is present at the Site due to the existence of historic disposal areas which provide likely sources for the groundwater contamination detected on the eastern end of the Site area investigated in the EE/CA report.

b. Actual or potential contamination of drinking water supplies or sensitive ecosystems; this factor is present at

the Site due to the presence of hazardous substances, including manganese and TCE, in groundwater. Although there are no known groundwater receptors in the Site vicinity, the groundwater may cause actual or potential contamination via groundwater migration and surface water runoff into the Creek which feeds into Lake Michigan (~1.5 miles from the Site).

c. High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate; this factor is present at the Site due to the existence of high levels of VOCs in the Site soils from the surface extending below ground to approximately 20 feet.

7. The actual or threatened release of hazardous substances from the Site may present an imminent and substantial endangerment to the public health, welfare, or the environment within the meaning of Section 106(a) of CERCLA, 42 U.S.C. §9606(a).

8. The removal actions required by this Order are necessary to protect the public health, welfare, or the environment, and are not inconsistent with the NCP and CERCLA.

V. ORDER

Based upon the foregoing Findings of Fact, Conclusions of Law, Determinations, and the Administrative Record for this Site, U.S. EPA hereby orders that Respondent perform the following actions:

1. Notice of Intent to Comply

Respondent shall notify U.S. EPA in writing within 3 business days after the effective date of this Order of Respondent's irrevocable intent to comply with this Order. Failure of Respondent to provide such notification within this time period shall be a violation of this Order.

2. Designation of Contractor, Project Coordinator, and On-Scene Coordinator

Respondent shall perform the removal actions itself or retain a contractor or contractors to implement the removal actions. Respondent shall notify U.S. EPA of Respondent's qualifications or the name and qualifications of such contractor(s), whichever is applicable, within 5 business days of the effective date of this Order. Respondent shall also notify U.S. EPA of the name and qualifications of any other contractors or subcontractors retained to perform work under this Order at least 5 business days prior to commencement of such work. U.S. EPA retains the right to disapprove of the Respondent or any of the contractors and/or subcontractors retained by the Respondent. If U.S. EPA disapproves a selected contractor, Respondent shall retain a

different contractor within 2 business days following U.S. EPA's disapproval and shall notify U.S. EPA of that contractor's name and qualifications within 3 business days of U.S. EPA's disapproval.

Within 5 business days after the effective date of this Order, the Respondent shall designate a Project Coordinator who shall be responsible for administration of all the Respondent's actions required by the Order and submit the designated coordinator's name, address, telephone number, and qualifications to U.S. EPA. To the greatest extent possible, the Project Coordinator shall be present on-site or readily available during site work. U.S. EPA retains the right to disapprove of any Project Coordinator named by the Respondent. If U.S. EPA disapproves a selected Project Coordinator, Respondent shall retain a different Project Coordinator within 3 business days following U.S. EPA's disapproval and shall notify U.S. EPA of that person's name and qualifications within 4 business days of U.S. EPA's disapproval. Receipt by Respondent's Project Coordinator of any notice or communication from U.S. EPA relating to this Order shall constitute receipt by Respondent.

The U.S. EPA has designated John O'Grady of the Remedial Response Branch, Region 5, as its On-Scene Coordinator ("OSC"). Respondent shall direct all submissions required by this Order to the OSC at 77 West Jackson Boulevard, (SR-6J), Chicago, Illinois 60604-3590, by certified or express mail. Respondent shall also send a copy of all submissions to Thomas Krueger, Assistant Regional Counsel, 77 West Jackson Boulevard, C-14J, Chicago, Illinois, 60604-3590. Respondent is encouraged to make its submissions to U.S. EPA on recycled paper (which includes significant post-consumer waste paper content where possible) and using two-sided copies.

3. Work to Be Performed

Respondent shall, at a minimum, perform an investigation and develop and submit to U.S. EPA an EE/CA Report in accordance with the attached Workplan. This Workplan is incorporated into and made an enforceable part of this Order.

The EE/CA Report shall be consistent with, at a minimum, U.S. EPA guidance entitled, "Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA", EPA/540-R-93-057, Publication 9360.32, PB 93-963402, dated August 1993.

3.1 EE/CA Report

Within 180 calendar days after the effective date of this Order, the Respondent shall submit to U.S. EPA for approval a draft EE/CA Report that is consistent with this Order and the Workplan.

U.S. EPA may approve, disapprove, require revisions to, or modify the draft EE/CA Report. If U.S. EPA requires revisions,

Respondent shall submit a revised EE/CA Report incorporating all of U.S. EPA's required revisions within 20 business days of receipt of U.S. EPA's notification of the required revisions.

In the event of U.S. EPA disapproval of the revised EE/CA Report, Respondent may be deemed in violation of this Order. In such event, U.S. EPA retains the right to terminate this Order, conduct a complete EE/CA, and obtain reimbursement for costs incurred in conducting the EE/CA from the Respondent.

The revised report shall also include the following certification signed by a person who supervised or directed the preparation of that report:

> Under penalty of law, I certify that, to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this EE/CA Report, the information submitted is true, accurate, and complete.

Respondent shall not commence or undertake any removal actions at the Site without prior U.S. EPA approval. Respondent shall notify U.S. EPA at least 48 hours prior to performing any on-site work pursuant to the Workplan.

3.2 Quality Assurance and Sampling

All sampling and analyses performed pursuant to this Order shall conform to U.S. EPA direction, approval, and guidance regarding sampling, quality assurance/quality control ("QA/QC"), data validation, and chain of custody procedures. Respondent shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that complies with U.S. EPA guidance. Upon request by U.S. EPA, Respondent shall have such a laboratory analyze samples submitted by U.S. EPA for quality assurance monitoring. Respondent shall provide to U.S. EPA the quality assurance/quality control procedures followed by all sampling teams and laboratories performing data collection and/or analysis. Respondent shall also ensure provision of analytical tracking information consistent with OSWER Directive No. 9240.0-2B, "Extending the Tracking of Analytical Services to PRP-Lead Superfund Sites."

Upon request by U.S. EPA, Respondent shall allow U.S. EPA or its authorized representatives to take split and/or duplicate samples of any samples collected by Respondent or its contractors or agents while performing work under this Order. Respondent shall notify U.S. EPA not less than 3 business days in advance of any sample collection activity. U.S. EPA shall have the right to take any additional samples that it deems necessary.

3.3 Reporting

Respondent shall submit a monthly written progress report to U.S. EPA concerning activities undertaken pursuant to this Order,

beginning 30 calendar days after the effective date of this Order, until termination of this Order, unless otherwise directed by the OSC. These reports shall describe all significant developments during the preceding period, including the work performed and any problems encountered, analytical data received during the reporting period, and developments anticipated during the next reporting period, including a schedule of work to be performed, anticipated problems, and planned resolutions of past or anticipated problems.

Respondent, and any successor in title shall, at least 30 days prior to the conveyance of any interest in real property at the Site, give written notice of this Order to the transferee and written notice of the proposed conveyance to U.S. EPA and the State. The notice to U.S. EPA and the State shall include the name and address of the transferee. The party conveying such an interest shall require that the transferee will provide access as described in Section V.4 (Access to Property and Information).

3.4 Additional Work

In the event that the U.S. EPA or the Respondent determine that additional work, including EE/CA support sampling and/or an engineering evaluation, is necessary to accomplish the objectives of the EE/CA Report, notification of such additional work shall be provided to the other party in writing. Any additional work which Respondent determines to be necessary shall be subject to U.S. EPA's written approval prior to commencement of the additional work. Respondent shall complete, in accordance with standards, specifications, and schedules U.S. EPA has approved, any additional work Respondent has proposed, and which U.S. EPA has approved in writing or that U.S. EPA has determined to be necessary, and has provided written notice of pursuant to this paragraph.

4. Access to Property and Information

Respondent shall provide or obtain access as necessary to the Site and all appropriate off-site areas, and shall provide access to all records and documentation related to the conditions at the Site and the activities conducted pursuant to this Order. Such access shall be provided to U.S. EPA employees, contractors, agents, consultants, designees, representatives, and State of Illinois representatives. These individuals shall be permitted to move freely at the Site and appropriate off-site areas in order to conduct activities which U.S. EPA determines to be necessary. Respondent shall submit to U.S. EPA, upon request, the results of all sampling or tests and all other data generated by Respondent or its contractor(s), or on the Respondent's behalf during implementation of this Order.

Where work under this Order is to be performed in areas owned by or in possession of someone other than Respondent, Respondent shall obtain all necessary access agreements within 14 calendar

days after the effective date of this Order, or as otherwise specified in writing by the OSC. Respondent shall immediately notify U.S. EPA if, after using its best efforts, it is unable to obtain such agreements. Respondent shall describe in writing its efforts to obtain access. U.S. EPA may then assist Respondent in gaining access, to the extent necessary to effectuate the response activities described herein, using such means as U.S. EPA deems appropriate.

5. Record Retention, Documentation, Availability of Information

Respondent shall preserve all documents and information, in its possession or the possession of its contractors, subcontractors or representatives, relating to work performed under this Order, or relating to the hazardous substances found on or released from the Site, for six years following completion of the removal actions required by this Order. At the end of this six year period and at least 60 days before any document or information is destroyed, Respondent shall notify U.S. EPA that such documents and information are available to U.S. EPA for inspection, and upon request, shall provide the originals or copies of such documents and information to U.S. EPA. In addition, Respondent shall provide documents and information retained under this Section at any time before expiration of the six year period at the written request of U.S. EPA. Any information that Respondent is required to provide or maintain pursuant to this Order is not subject to the Paperwork Reduction Act of 1995, 44 U.S.C. §3501 et seq.

6. Off-Site Shipments

All hazardous substances, pollutants or contaminants removed off-site pursuant to this Order for treatment, storage or disposal shall be treated, stored, or disposed of at a facility in compliance, as determined by U.S. EPA, with the U.S. EPA Off-Site Rule, 40 CFR §300.440, 58 Fed. Reg. 49215 (Sept. 22, 1993).

7. Compliance With Other Laws

All actions required pursuant to this Order shall be performed in accordance with all applicable local, state, and federal laws and regulations except as provided in Section 121(e) of CERCLA and 40 CFR §300.415(j). In accordance with 40 CFR §300.415(j), all on-site actions required pursuant to this Order shall, to the extent practicable, as determined by U.S. EPA, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements under federal environmental or state environmental or facility siting laws.

8. Emergency Response and Notification of Releases

If any incident, or change in Site conditions, during the activities conducted pursuant to this Order causes or threatens to cause an additional release of hazardous substances from the

Site or an endangerment to the public health, welfare, or the environment, the Respondent shall immediately take all appropriate action to prevent, abate or minimize such release, or endangerment caused or threatened by the release. Respondent shall also immediately notify the OSC or, in the event of his/her unavailability, shall notify the Regional Duty Officer, Emergency Response Branch, Region 5 at (312) 353-2318, of the incident or Site conditions.

Respondent shall submit a written report to U.S. EPA within 7 business days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. Respondent shall also comply with any other notification requirements, including those in Section 103 of CERCLA, 42 U.S.C. §9603, and Section 304 of the Emergency Planning and Community Right-To-Know Act, 42 U.S.C. §11004.

VI. AUTHORITY OF THE U.S. EPA ON-SCENE COORDINATOR

The OSC shall be responsible for overseeing the implementation of this Order. The OSC shall have the authority vested in an OSC by the NCP, including the authority to halt, conduct, or direct any work required by this Order, or to direct any other response action undertaken by U.S. EPA or Respondent at the Site. Absence of the OSC from the Site shall not be cause for stoppage of work unless specifically directed by the OSC.

U.S. EPA and Respondent shall have the right to change their designated OSC or Project Coordinator. U.S. EPA shall notify the Respondent, and Respondent shall notify U.S. EPA, as early as possible before such a change is made, but in no case less than 24 hours before such a change. Notification may initially be made orally, but shall be followed promptly by written notice.

VII. PENALTIES FOR NONCOMPLIANCE

Violation of any provision of this Order may subject Respondent to civil penalties of up to $27,500 per violation per day, as provided in Section 106(b)(1) of CERCLA, 42 U.S.C. §9606(b)(1). Respondent may also be subject to punitive damages in an amount up to three times the amount of any cost incurred by the United States as a result of such violation, as provided in Section 107(c)(3) of CERCLA, 42 U.S.C. §9607(c)(3). Should Respondent violate this Order or any portion hereof, U.S. EPA may carry out the required actions unilaterally, pursuant to Section 104 of CERCLA, 42 U.S.C. §9604, and/or may seek judicial enforcement of this Order pursuant to Section 106 of CERCLA, 42 U.S.C. §9606.

VIII. REIMBURSEMENT OF COSTS

Respondent shall reimburse U.S. EPA, upon written demand, for all response costs incurred by the United States in overseeing Respondent's implementation of the requirements of this Order. U.S. EPA may submit to Respondent on a periodic basis a bill for all response costs incurred by the United States with respect to this Order. U.S. EPA's Itemized Cost Summary, or such other summary as certified by U.S. EPA, shall serve as the basis for payment.

Respondent shall, within 30 days of receipt of the bill, remit a cashier's or certified check for the amount of those costs made payable to the "Hazardous Substance Superfund," to the following address:

U.S. Environmental Protection Agency
Program Accounting & Analysis Section
P.O. Box 70753
Chicago, Illinois 60673

Respondent shall simultaneously transmit a copy of the check to the Director, Superfund Division, U.S. EPA Region 5, 77 West Jackson Blvd., Chicago, Illinois, 60604-3590. Payments shall be designated as "Response Costs - Vacant Lot Site" and shall reference the payer's name and address, the U.S. EPA site identification number (A527), and the docket number of this Order.

Interest at a rate established by the Department of the Treasury pursuant to 31 U.S.C. §3717 and 4 CFR §102.13 shall begin to accrue on the unpaid balance from the day after the expiration of the 30 day period notwithstanding any dispute or an objection to any portion of the costs.

IX. RESERVATION OF RIGHTS

Nothing herein shall limit the power and authority of U.S. EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing herein shall prevent U.S. EPA from seeking legal or equitable relief to enforce the terms of this Order. U.S. EPA also reserves the right to take any other legal or equitable action as it deems appropriate and necessary, or to require the Respondent(s) in the future to perform additional activities pursuant to CERCLA or any other applicable law.

X. OTHER CLAIMS

By issuance of this Order, the United States and U.S. EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondent. The United States or U.S. EPA shall not be a party or be held out as a party to any contract entered into by the Respondent or its directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out activities pursuant to this Order. Each party shall bear its own costs and attorneys fees in connection with the action resolved by this Order.

This Order does not constitute a pre-authorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. §9611(a)(2).

Nothing in this Order constitutes a satisfaction of or release from any claim or cause of action against the Respondent or any person not a party to this Order, for any liability such person may have under CERCLA, other statutes, or the common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106(a) or 107(a) of CERCLA, 42 U.S.C. §§9606(a), 9607(a).

XI. MODIFICATIONS

Modifications to any plan or schedule may be made in writing by the OSC or at the OSC's oral direction. If the OSC makes an oral modification, it will be memorialized in writing within 7 business days; however, the effective date of the modification shall be the date of the OSC's oral direction. The rest of the Order, or any other portion of the Order, may only be modified in writing by signature of the Director, Superfund Division, Region 5.

If Respondent seek permission to deviate from any approved plan or schedule, Respondent's Project Coordinator shall submit a written request to U.S. EPA for approval outlining the proposed modification and its basis.

No informal advice, guidance, suggestion, or comment by U.S. EPA regarding reports, plans, specifications, schedules, or any other writing submitted by the Respondent shall relieve Respondent of its obligations to obtain such formal approval as may be required by this Order, and to comply with all requirements of this Order unless it is formally modified.

XII. NOTICE OF COMPLETION

After submission and approval of the EE/CA Report, Respondent may request that U.S. EPA provide a Notice of Completion of the work

required by this Order. If U.S. EPA determines, after U.S. EPA's review of the Final EE/CA Report, that all work has been fully performed in accordance with this Order, except for certain continuing obligations required by this Order (e.g., record retention), U.S. EPA will provide written notice to the Respondent. If U.S. EPA determines that any removal activities have not been completed in accordance with this Order, U.S. EPA will notify the Respondent, provide a list of the deficiencies, and require that Respondent correct such deficiencies. The Respondent shall implement these requirements and shall submit a modified Final EE/CA Report in accordance with the U.S. EPA notice. Failure to correct the identified deficiencies shall be a violation of this Order.

XIII. ACCESS TO ADMINISTRATIVE RECORD

The Administrative Record supporting these removal actions is available for review during normal business hours in the U.S. EPA Record Center, Region 5, 77 W. Jackson Blvd., Seventh Floor, Chicago, Illinois. Respondent may contact Thomas Krueger, Assistant Regional Counsel, at (312) 886-0562 to arrange to review the Administrative Record. An index of the Administrative Record is attached to this Order.

XIV. OPPORTUNITY TO CONFER

Within 3 business days after issuance of this Order, Respondent may request a conference with U.S. EPA. Any such conference shall be held within 5 business days from the date of the request, unless extended by agreement of the parties. At any conference held pursuant to the request, Respondent may appear in person or be represented by an attorney or other representative.

If a conference is held, Respondent may present any information, arguments or comments regarding this Order. Regardless of whether a conference is held, Respondent may submit any information, arguments or comments (including justifications for any assertions that the Order should be withdrawn against a Respondent), in writing to U.S. EPA within 2 business days following the conference, or within 7 business days of issuance of the Order if no conference is requested. This conference is not an evidentiary hearing, does not constitute a proceeding to challenge this Order, and does not give Respondent a right to seek review of this Order. Requests for a conference shall be directed to Thomas Krueger, Assistant Regional Counsel, at (312) 886-0562. Written submittals shall be directed as specified in Section V.2 of this Order.

XV. SEVERABILITY

If a court issues an order that invalidates any provision of this Order or finds that Respondent has sufficient cause not to comply with one or more provisions of this Order, Respondent shall remain bound to comply with all provisions of this Order not invalidated by the court's order.

XVI. EFFECTIVE DATE

This Order shall be effective 10 business days following issuance unless a conference is requested as provided herein. If a conference is requested, this Order shall be effective 5 business days after the day of the conference.

IT IS SO ORDERED

BY: _____ DATE: 9/21/00

William E. Muno, Director
Superfund Division
United States
Environmental Protection Agency
Region 5

APPROVED SITE INVESTIGATON WORK PLAN

Version 2.1

July 1999

Prepared by

Carlson Environmental, Inc.
65 East Wacker Place
Suite 1500
Chicago, Illinois 60601

on behalf of

Fansteel, Inc.
One Tantalum Place
North Chicago, Illinois 60064

Contents

CARLSON ENVIRONMENTAL, INC.

July 23, 1999 PN 9566B

Mr. John O'Grady
Removal Project Manager
Office of Superfund (SR-6J0)
U.S. EPA Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

RE: Final Plan Documents
Fansteel, Inc.
Number One Tantalum Place
North Chicago, Illinois

Dear Mr. O'Grady:

Enclosed are two copies of the plans listed below, prepared for the above-referenced site. Upon approval of these plans, Carlson Environmental, Inc. (CEI) is prepared to mobilize within two weeks to begin the site field activities. CEI notes that, based on the backfilling schedule for the Vacant Lot Site, there may be a delay in installing the six monitoring wells planned on the eastern border of the Vacant Lot Site.

1. *Site Investigation Work Plan*, Version 2.1 dated July 1999 and prepared by CEI. This has been revised to remove the sampling of the portion of Pettibone Creek that is located on the Vacant Lot Site. In addition, the volatile organic compound sampling will be performed using field preservation techniques in accordance with EPA Method 5035 rather than the EnCore samplers, as previously proposed. Lastly, the tables have been revised to be consistent with CEI's *QAPP*.

2. *Quality Assurance Project Plan (QAPP)*, Version 1.2 dated July 1999, and prepared by CEI. The *QAPP* has been revised to ensure consistency with the *Site Investigation Work Plan*. Additionally, Section 7.0 of the *QAPP* indicates that Sequoia Analytical will be performing the project-required tantalum analysis, rather than Great Lakes Analytical. The relationship between Sequoia Analytical and Great Lakes Analytical is described in Section 7.0 and the letter from Great Lakes Analytical which is included as Appendix D.

3. *Quality Assurance Program (QAP)*, Revision 5.7 dated February 18, 1998, and prepared by Great Lakes Analytical. Attached to the *QAP* are three letters which respond to the EPA comments and a letter from Great Lakes Analytical describing its relationship with Sequoia Analytical, the laboratory that will perform the project-required tantalum analysis. Attached are the most recent versions of Great Lakes Analytical's standard operating procedures (SOPs)

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and Sequoia Analytical's SOPs for the tantalum analysis. The SOPs have been revised to incorporate the EPA comments. The attached SOPs are ordered by method number.

Please feel free to contact me at (312) 704-8843 if you have any questions or comments as you review the enclosed materials.

Respectfully submitted,

CARLSON ENVIRONMENTAL, INC.

Margaret Karolyi

Margaret M. Karolyi, P.E.
Senior Project Manager

cc: Mr. Jonathan Jackson, Fansteel
Mr. Mark Steger, McBride, Baker & Coles

enclosures

February 25, 2000

SR-6J

Ms. Margaret Karolyi
Carlson Environmental, Inc.
65 East Wacker Place, Suite 1500
Chicago, Illinois 60601

VIA FACSIMILE
AND CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Re: Notice of Approval of Site Investigation Work Plan
Fansteel, Inc.; North Chicago, Lake County, Illinois

This letter provides Fansteel, Inc., and their contractor, Carlson Environmental, Inc. (CEI), with the United States Environmental Protection Agency's (U.S. EPA) *Notice of Approval of the Site Investigation Work Plan (Work Plan)*, for the Fansteel, Inc., facility located in North Chicago, Lake County, Illinois.

Approval of Site Investigation Work Plan: Based upon a thorough review by the U.S. EPA of the draft and revised EE/CA Work Plan, the U.S. EPA hereby approves the July 1999, Revised Version 2.1, Site Investigation Work Plan with the following modifications.

> **U.S. EPA *Comments Incorporated By Reference into Work Plan:*** Fansteel and CEI shall incorporate all of the comments and concerns of the U.S. EPA into the Work Plan.

Quality Assurance Project Plan (QAPP) Approval: This authorization is contingent upon the Fansteel and CEI's incorporation, in the implementation of the Work Plan, of the attached comments from Mr. Richard Byvik, Chemist with the U.S. EPA Region 5 Superfund Division Technical Support Section. Failure to incorporate any of the modifications cited in this letter or in the forthcoming final QAPP to be submitted, shall not affect the project schedule or the accomplishment of the project milestones.

Sequence of Events, Letters, Submittals, Etc. Incorporated by Reference: This letter references the following sequence of events, letters, submittals, etc., relative to the Work Plan submittals and review and comment letters by the U.S. EPA:

1. June 17, 1997, General Notice of Potential Liability Letter.

2. August 25, 1997, Meeting at the U.S. EPA Region 5 Office regarding the June 17, 1997, General Notice of Potential Liability Letter.

3. November 4, 1997, Letter to Mr. Clifton A. Lake, Esq., of McBride, Baker and Coles, following up on the August 25, 1997, meeting at the U.S. EPA Region 5 Office.

17. March 16, 1999, transmittal from Ms. Karolyi to John O'Grady, transmitting CEI's revised QAPP and supplement to Laboratory QAPP prepared by Great Lakes Analytical.

18. May 6, 1999, Letter to Mr. Lake regarding the QAPP.

19. June 28, 1999, facsimile to Ms. Karolyi, regarding U.S. EPA's comments on the QAPP, with a copy to Mr. Mark J. Steger, Esq., McBride, Baker & Coles, Inc.

20. July 23, 1999, Letter to John O'Grady from Ms. Karolyi transmitting Work Plan (Revised Version 2.1), CEI's QAPP (Version 1.2) dated July 1999, and Great Lakes Analytical's QAPP (revision 5.7), dated February 18, 1998.

21. February 23, 2000, Meeting at the U.S. EPA Region 5 Office with Mr. Michael J. Mocniak, VP, General Counsel and Secretary of Fansteel, Mr. Mark J. Steger of McBride, Baker & Coles, Ms. Margaret M. Karolyi and Mr. Edward E. Garske of CEI. Messrs. Krueger and O'Grady represented the U.S. EPA Region 5 Superfund Division.

Submittal of Final Report:

Please note that the submittal of the final Report must be submitted no later than 48 weeks from the date of this letter or **no later than Friday, January 26, 2001**. The draft Report should be submitted to the U.S. EPA Region 5 **no later than Friday, November 3, 2000,** in order to provide adequate time for the U.S. EPA's review of the draft submittal, incorporation of comments, and re-submittal of the final Report.

If you have any questions, please contact me at (312) 886-1477.

Sincerely,

John J. O'Grady
Remedial Project Manager
Superfund Division

Enclosure

Fansteel, Inc.
Number One Tantalum Place
North Chicago, Illinois

Comments on the second revision Quality Assurance Project Plan (QAPP) that was not addressed

E. GLA 6010 BG SOP ANALYSIS OF METALS USING ICP

1) Section 8.1
Before any samples are analyzed. **Tantalum** must be included in the method validation performed.
2) Section 10.0, Table 1, and APPENDIX A
Include **Ta** in the calibration standards.
3) APPENDIX B
For element **Ta** indicate the Wavelength, IDL, and any Interferant(s).

COMMENT:

Great Lakes Analytical provided a copy of **Sequoia Analytical's** ICP SOP that will be used for Tantalum analysis. The first page indicates that Germanium and Tantalum have been added to the analyte list. Tantalum is not included in TABLE 1, and not included in the preparation of the calibration standards, Sections 5.3 and 5.4, or anywhere in the **Sequoia** Method No.: EPA 6010A.

The EPA Method 1620 indicates that Tantalum can be determined using Semiquantitative Screening by ICP. Semiquantitative screening requires a sequential ICP instrument. Tantalum is analyzed at a wavelength of 226.230 nm with a detection limit of 0.5 mg/L. Tantalum working standard is prepared at 1.0 mg/L. The matrix spike is prepared at the midpoint of the calibration curve. **Sequoia** must be able to establish acceptable precision and accuracy of this method for the analysis of Tantalum. **Sequoia** should discuss how Tantalum will be analyzed.

CARLSON ENVIRONMENTAL, INC.

SITE INVESTIGATION WORK PLAN

Fansteel, Inc.
Number One Tantalum Place
North Chicago, Illinois

Prepared by
CARLSON ENVIRONMENTAL, INC.
65 East Wacker Place
Suite 1500
Chicago, Illinois 60601
(312) 346-2140

Project No. 9566B

Revised Version 2.1
July 1999

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TABLE OF CONTENTS (Continued)

FIGURES

TABLES

ATTACHMENTS

1500 · Chicago, Illinois 606[illegible] · Phone (312) 346-2140 · Fax (312) 346-6956

EXECUTIVE SUMMARY

On behalf of Fansteel, Inc. (Fansteel), Carlson Environmental, Inc. (CEI) prepared this *Site Investigation Work Plan* for the Fansteel North Chicago facility (site). The Vacant Lot Site, a Superfund site, is located adjacent to and west of the Fansteel North Chicago facility. The activities detailed in the *Site Investigation Work Plan* are intended to comply with the request from the United States Environmental Protection Agency (EPA) to conduct an investigation to identify any potential contaminant plumes which may be impacting the contamination detected at the Vacant Lot Site, and to collect additional samples from Pettibone Creek, which flows across the Vacant Lot Site in a north to south direction.

This *Site Investigation Work Plan* has been prepared by CEI on behalf of Fansteel to detail the proposed soil, ground water and sediment sampling to be conducted by Fansteel. This *Site Investigation Work Plan* is being submitted for EPA review and approval. Upon receiving approval of this work plan, Fansteel intends to conduct the Site Investigation. Upon completion of the Site Investigation, a *Site Investigation Report* detailing the results of the Site Investigation will be prepared and submitted to the EPA.

Numerous site investigations have been conducted at the Vacant Lot Site that also included sediment sampling in Pettibone Creek. The results of these investigations, which included the collection of soil samples and sediment samples from Pettibone Creek, indicated the presence of elevated concentrations of heavy metals, trichloroethene (TCE) and polychlorinated biphenyls (PCBs) on the Vacant Lot Site.

The proposed Site Investigation includes the emplacemnt of 33 soil borings and the installation of 9 ground water monitoring wells on or along the Fansteel property. The borings and monitoring wells will be sampled for volatile organic compounds (VOCs) and selected metals. Additionally, six sediment samples will be collected from Pettibone Creek and the associate banks, and sampled for selected metals, cyanide and PCBs. The metals analyses will include analysis for the presence of tantalum (Ta), a specialty metal used by Fansteel.

The sampling results from the Site Investigation will be compared to the action levels detailed in this Work Plan. If contaminant concentrations are detected above these action levels, Fansteel may propose alternative site-specific remediation objectives using a risk-based type of analysis (i.e. a Tier 2 or Tier 3 analysis). If soil contamination or a ground water contaminant plume that appears to be impacting the Vacant Lot Site and/or Pettibone Creek is detected above these site-specific remediation objectives, an additional investigation will be performed to delineate the extent of the contaminant and to investigate possible off-site sources of contamination. The results of the investigation(s) will be detailed in a *Site Investigation Report.*

Upon completion of the proposed investigation(s) and evaluation of the results, Fansteel will identify potential off-site sources of contamination and define the extent of contaminant plumes that may be impacting the Vacant Lot Site. If the investigation results indicate that contamination at the Fansteel North Chicago facility is significantly impacting the adjacent Vacant Lot Site and remediation at the Fansteel North Chicago facility is appropriate, Fansteel will research viable remediation alternatives and prepare an *Engineering Evaluation and Cost Assessment (EE/CA) Report*, if necessary.

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1.0 INTRODUCTION

1.1 Project Background - On behalf of Fansteel, Inc. (Fansteel), Carlson Environmental, Inc. (CEI) has prepared this *Site Investigation Work Plan*. This work plan details a proposed site investigation at the Fansteel North Chicago facility and additional sediment sampling in Pettibone Creek.

1.1.1 RCRA Closure Activities - Fansteel is currently undergoing RCRA Closure of a former Hazardous Waste Management Unit (HWMU) at the Fansteel North Chicago facility. The most recent investigative work involved soil sampling conducted by CEI in 1990. During the RCRA-related investigations, elevated concentrations of trichloroethene (TCE), lead and cadmium were detected in the site soils.

The investigation results were submitted by Fansteel to the Illinois Environmental Protection Agency (IEPA) RCRA Section. Fansteel intends to work with the IEPA RCRA Section to complete the RCRA Closure of the HWMU. At this time, Fansteel is waiting for a response from the IEPA regarding the most recent submittal.

1.1.2 EE/CA for Vacant Lot Site - Numerous site investigations have been conducted at the Vacant Lot Site which is located adjacent to and west of the Fansteel North Chicago facility. Pettibone Creek flows across the Vacant Lot Site in a north to south direction. In addition to previous investigations, Ecology and Environment, Inc. (E&E) conducted a site assessment at the Vacant Lot Site in 1994. The results of the previous investigations, which included the collection of soil samples and the collection of sediment samples from Pettibone Creek, indicated the presence of elevated concentrations of heavy metals, TCE, and polychlorinated biphenyls (PCBs) on the Vacant Lot Site.

In 1997, E&E conducted an Engineering Evaluation/Cost Analysis (EE/CA) for the Vacant Lot Site under contract with United States Environmental Protection Agency (EPA). The EE/CA included a historic review of the site, additional soil, ground water and sediment

sampling at the Vacant Lot Site, a feasibility type analysis of potential remediation alternatives, and a cost analysis for various remediation strategies.

It is alleged in the EE/CA that historically, the Vacant Lot Site has been used for waste disposal by industrial properties in the vicinity of the Vacant Lot Site. Additionally, the EPA believes that potential contamination at the Fansteel North Chicago facility may have impacted the ground water at the Vacant Lot Site. Outfalls from the Fansteel North Chicago facility discharge to Pettibone Creek. The EPA also believes that historic discharges from these outfalls may have impacted the creek sediments.

In the letter to The Fansteel Corporation dated June 17, 1997, the EPA has requested that Fansteel conduct an investigation of the Fansteel North Chicago facility to identify any potential contaminant plume which may be contributing to the contamination detected at the Vacant Lot Site, and to collect additional samples from Pettibone Creek. This *Site Investigation Work Plan* has been prepared by CEI on behalf of Fansteel in order to detail the proposed soil, ground water and sediment sampling that will be conducted on behalf of Fansteel. This *Site Investigation Work Plan* is being submitted for EPA review and approval. Upon receiving approval of this work plan, Fansteel plans to proceed with the Site Investigation according to the project schedule included in Section 6.3.

1.2 Purpose of the Site Investigation - The activities detailed in the *Site Investigation Work Plan* are intended to comply with the request from the EPA to conduct an investigation, as outlined in a letter to The Fansteel Corporation dated June 17, 1997.

As outlined in the EPA's letter, the proposed Site Investigation is to accomplish the following two goals:

- Identify the nature and extent of potential contamination on the Fansteel facility, including any potential contamination that may be contributing to the ground water

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contamination previously identified at the adjacent Vacant Lot Site (especially potential sources of trichloroethene); and

- Conduct additional sampling of the sediments of Pettibone Creek to determine the nature and extent of the sediment contamination.

CEI notes that sediment sampling of the portion of Pettibone Creek that traverses the Vacant Lot Site was initially included in the scope of this work plan. However, upon conversation with EPA Region 5 Remedial Project Manager, Mr. John O'Grady, the sediment sampling on the Vacant Lot Site has been removed from this work plan. Recently, the Vacant Lot Site has been undergoing soil remediation activities that have included excavating the sediments from Pettibone Creek on the Vacant Lot Site. Due to the excavation activities, EPA Region 5 is no longer requiring sediment sampling on the Vacant Lot Site. As discussed in Section 3.3, CEI will still collect samples from Pettibone Creek, at three locations downstream from the Vacant Lot Site.

2.0 GENERAL SITE INFORMATION

2.1 Site Description - The Fansteel North Chicago facility is located at Number One Tantalum Place, approximately two miles east of the intersection of Martin Luther King Jr. Street and U.S. Highway 41, in North Chicago, Lake County, Illinois (refer to Figure One in Attachment A). The site is bounded by the North Chicago Refiners and Smelters facility to the east, Martin Luther King Jr. Street and the Federal Chicago plant to the south, the Vacant Lot Site to the west, and the Elgin, Joliet & Eastern (EJ&E) Railroad to the north.

The site consists of an older plant complex located on an approximately eight-acre parcel. There are two brick buildings on the site; the boiler house and the main production building which is comprised of multi-story and multi-use inner buildings. In addition, a transite building and a few aluminum buildings are present on the site. Total gross floor space is reportedly 325,500 square feet.

The portions of the property not covered by buildings are generally asphalt- or concrete-paved and are used as parking lot areas or access ways. Two large, empty upright above-ground tanks are located at the northern end of the property. A railroad spur is located just inside the eastern edge of the site, and an elevated railroad siding is located just south of the above-ground tanks. The entire site is enclosed by security fencing, and there is some vegetation, consisting of grass and bushes, between the office area and Martin Luther King Jr. Street.

The site topography is essentially flat, although on the east side, the site is elevated near the fence line, sloping down into the parking lot. The building is elevated compared to the parking lot, and the railroad spur on the east side is several feet below the site grade. The railroad property north of the site slopes steeply downwards toward the site.

The site configuration is depicted in Figure Two in Attachment A.

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2.2 Site Physiography - In November 1993, Geraghty & Miller, Inc. conducted a ground water investigation at the Vacant Lot Site, which focused on shallow ground water to a depth of 14 feet below ground surface (ft bgs). The investigation was detailed in a report, [redacted] The information below regarding the site geology and site soils is summarized from this report prepared by Geraghty & Miller, Inc.

2.2.1 Site Geology - The general regional geological information indicates that unconsolidated deposits in the vicinity of the site consist of glacial lake deposits and glacial till. The deposits consist of silt, clay and sand deposits accumulated on the floors of glacial lakes. These strata are reportedly underlain by glacial till. Generally, the glacial lake deposits range from 10 to 25 feet in thickness with the underlying glacial till ranging from 50 to 100 feet in thickness.

2.2.2 Site Soils -Based on the borings advanced by Geraghty & Miller, Inc. during their investigation, the soil at the Vacant Lot Site generally consisted of 1.5 to 5 feet of black sandy fill resembling slag or fly ash. Tan to gray silty clay containing discontinuous lateral silty to gravel/ sand deposits is located beneath this fill material to a depth of approximately 10 ft bgs. Grayish silty clay with several discontinuous lateral thin sand and gravel seams are present from approximately 10 to 20 ft bgs. It is anticipated that the soil at the Fansteel North Chicago facility will be similar to the tan to gray silty clay with discontinuous silty to gravel/sand deposits encountered by Geraghty & Miller, Inc.

2.3 Site History - Vulcan Louisville Smelting Company (VLS) previously operated on the areas that currently comprise the Vacant Lot Site, the Fansteel North Chicago facility and North Chicago Refiners and Smelters. Based on a review of Sanborn Fire Insurance Maps, VLS is shown to occupy areas of the Fansteel North Chicago facility during 1921, 1917, 1924 and 1929.

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According to information provided by representatives of Fansteel, in 1942, the federal government purchased a portion of the VLS property, authorized and financed through its Defense Plant Corporation, the construction of Fansteel's North Chicago facility. A Fansteel subsidiary, the Tantalum Defense Corporation, was formed and leased to the site from the federal government to supply the government with various materials needed during World War II. The facility was subsequently sold by the federal government to Fansteel in 1947. The Fansteel Metals Division and Fansteel VR/Wesson Foundry Division previously operated at the site. The main facility operations included the production of specialty metals and related products, in addition to foundry operations. Production activities at the North Chicago facility ceased in 1990.

2.4 Current Site Operations - The site is currently used by Fansteel as office space for its corporate headquarters. Production related activities ceased at the North Chicago facility in 1990. The former plant buildings are primarily vacant and are routinely maintained, as necessary.

2.5 Pettibone Creek - As discussed in the EE/CA prepared for the Vacant Lot Site by E&E:

> "The [Vacant Lot] site is transected by the Pettibone Creek (Creek), an intermittent water body that lies in a relatively steep-sided ravine, and originates at the northwest boundary of the [Vacant Lot] site. The ravine is lined with large weeds, bushes, and deciduous trees. The Creek flows through the [Vacant Lot] site from north to south, and then flows east into Lake Michigan (1.5 miles from the site). The Creek, at its origin receives water through the North Chicago stormwater discharge and a ditch. The Creek is also fed by rainwater and outfalls from two nearby industries/facilities, EMCO Chemical Distributing, Inc. (EMCO), and Fansteel, Inc. (Fansteel)."

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The section of Pettibone Creek located on the Vacant Lot Site is shown in Figure Three, in Attachment A. As discussed in Section 1.2, the Pettibone Creek sediments have been excavated from the Vacant Lot Site.

3.0 FOCUS OF SITE INVESTIGATION

3.1 Soil -During the proposed Site Investigation, a total of 33 soil borings will be emplaced at locations across the Fansteel North Chicago facility to a depth of approximately 20 ft bgs. The borings will be continuously sampled at two-foot intervals. Each sample will be placed in appropriate laboratory sample containers and retained by CEI for possible laboratory analysis.

3.2 Ground Water -A total of nine ground water monitoring wells will be installed at the site and screened from approximately 10 to 20 ft bgs.

3.3 Pettibone Creek Sediment -Sediment samples from two sample depths (0 to 6 inches and 6 to 12 inches) will be collected from three locations in Pettibone Creek, downstream from the Vacant Lot Site. As discussed in Section 1.2, the creek sediments have been excavated from the Vacant Lot Site.

3.4 Ditch Sediment - CEI will collect sediment samples from a drainage ditch that is located north of and drains into Pettibone Creek. This drainage ditch appears to receive surface runoff from an adjacent transformer bank where staining is present.

3.5 Compounds of Concern in Soil and Ground Water

3.5.1 VOCs - Elevated concentrations of volatile organic compounds (VOCs) were detected in the soil (0-9 feet) and ground water at the Vacant Lot Site. Additionally, TCE contamination has been identified on the Fansteel property during the RCRA Closure investigations. Fansteel has been asked to investigate the soil and ground water at the North Chicago facility to determine if there is a VOC soil and/or ground water plume that may be migrating on to the Vacant Lot Site. Therefore, soil and ground water sampling will include VOCs analysis.

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3.5.2 Pb/Cd/Ta - Elevated concentrations of various metals have been detected in the soil, ground water and Pettibone Creek sediment at the Vacant Lot Site. Tantalum (Ta) is a specialty metal that was previously used at the Fansteel North Chicago facility. Results from previous Fansteel RCRA Closure investigations have demonstrated elevated concentrations of lead (Pb) and cadmium (Cd) are present in the site soils located at the northern end of the Fansteel facility. Therefore, all total metals analyses in the soil and ground water will include Ta, Pb and Cd.

As discussed in Section 5.0, in order to evaluate the migration to ground water pathway, soil samples must also be analyzed for pH. In addition, the soil also must be analyzed for synthetic precipitate leaching procedure (SPLP) Pb in order to evaluate the migration to ground water pathway for lead.

3.5.3 PNAs - Elevated concentrations of polynuclear aromatic hydrocarbons (PNAs) have been detected in the soil at the Vacant Lot Site. Therefore, the soil samples will be analyzed for PNAs.

As discussed in Section 5.0, in order to evaluate the migration to ground water pathway, soil samples must also be analyzed for pH. In addition, the soil also must be analyzed for synthetic precipitate leaching procedure (SPLP) Pb in order to evaluate the migration to ground water pathway for lead.

3.6 Compounds of Concern in Creek and Ditch Sediments

3.6.1 TAL Metals/Ta/CN - Elevated concentrations of various metals have been detected in the Pettibone Creek sediment at the Vacant Lot Site. Fansteel has been requested to collect additional sediment samples from Pettibone Creek for metals analyses. The sediment sampling will consist of the 23 Target Analyte List (TAL) Metals, Ta and cyanide (CN). Additionally, the samples will be analyzed for pH and SPLP Pb to evaluate the migration to ground water pathway.

3.6.2 PNAs -Elevated concentrations of PNAs have been detected in the Pettibone Creek sediment at the Vacant Lot Site. Therefore, the sediment samples will be analyzed for PNAs.

3.6.3 PCBs - PCBs were detected in the sediment samples collected from the portion of Pettibone Creek on the Vacant Lot Site. The sediment sampling analysis will include PCBs.

3.6.4 Pesticides - The EPA has requested that the Creek sediment sampling include pesticides. Therefore, the Creek sediment samples will be analyzed for pesticides. However, the ditch sediment samples will not be analyzed for pesticides.

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4.0 SITE-SPECIFIC SAMPLING PLAN

The Site-Specific Sampling Plan has been developed to determine if historic releases at the subject site are responsible for the soil and ground water contamination detected at the Vacant Lot Site adjacent to and west of the subject site. The Site Investigation will include the emplacement and sampling of soil borings, and the installation, development, and sampling of ground water monitoring wells in addition to sediment sampling from Pettibone Creek and the drainage ditch located north of the Vacant Lot Site.

4.1 Preliminary Activities - All personnel involved in this project will receive the appropriate hazardous waste site worker training (29 CFR 1910.120). In addition, all personnel will be trained in general and site-specific health and safety procedures, as well as quality assurance and quality control procedures.

Prior to beginning the field activities associated with the Site Investigation, CEI will contact local underground utility locating services to identify any natural gas, electric, water, sewer, cable television, or telephone utilities that may be located at the site. In addition, CEI will have an on-site meeting with site personnel to further determine the locations of any additional utilities such as sewers, pipes, water mains, steam tunnels, or other utilities not identified by the local underground utility locating services.

4.2 Sampling Locations - The proposed soil boring and ground water monitoring well locations are presented below and shown in Figure Two in Attachment A. The proposed sediment sample locations are detailed below and shown in Figure Three in Attachment A.

4.2.1 Soil - CEI's strategy for investigating the Fansteel property includes soil sampling across the site for VOCs, Pb, Cd and Ta. Each boring will be advanced and sampled continuously to a depth of approximately 20 ft bgs. Initially, CEI overlaid a 150-foot spaced sample grid over the site map to generate the soil boring locations. This grid pattern, based

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with a random point of origin, produced 33 sampling locations. CEI then made the adjustments listed below.

- One boring was eliminated due to its proximity to a 300,000 gallon underground reservoir located beneath the "Sintering Building."

- Since there is limited access and a subsurface water line and other buried utilities along the west property line, the westernmost sampling locations that were generated by the 150-foot grid strategy were shifted further west to the Vacant Lot Site (subject to access approval).

- Several other sampling locations were moved to avoid drilling through building foundations unnecessarily.

- Two additional borings were added in the vicinity (to the south and to the west) of the former HWMU in order to collect samples in the areas previously shown to have been impacted by elevated TCE, Pb and Cd concentrations.

- One of the southern wells along the western property line was eliminated and the well spacing of the remaining south wells along the western property line were adjusted.

- The three northernmost wells along the western property line were shifted further north to place these wells at locations that, based on the assumed ground water flow direction, would be down gradient from the previously detected TCE plume in the vicinity of the former HWMU.

4.2.2 Ground Water - Nine of the soil borings will be converted to ground water monitoring wells. The six boring locations located along the west property line of the subject site will be converted to ground water monitoring wells (five wells to evaluate the potential migration to the west and one well to evaluate the potential migration to the southwest). In

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addition, the boring located southeast of Metallurgical Building "B", the boring located east of the Warehouse, and the boring located east northeast of the former HWMU will be converted to ground water monitoring wells.

The nine proposed well locations will provide perimeter ground water monitoring locations. The seven western and southern wells serve as down gradient wells and the sampling results from these wells should demonstrate which contaminants, if any, may be migrating from the Fansteel property to the Vacant Lot Site and Pettibone Creek. The two eastern and northern wells will serve as up gradient wells. Each ground water monitoring well will be screened to intersect the ground water between approximately 10 and 20 ft bgs, the zone of ground water impacts identified on the Vacant Lot Site.

4.2.3 Sediment -Pettibone Creek flows through the Vacant Lot Site from north to south, and then flows south and east towards Sheridan Road and then into Lake Michigan, which is approximately 1.5 miles from the Vacant Lot Site. CEI will collect samples from three locations south of 22nd Street. These precise sampling locations are based on physical constraints and accessibility to Pettibone Creek, and therefore will be selected at the time of sampling. Generally, the sample locations will be located within the first 100 yards south of 22nd Street, the first 100 yards west of Sheridan Road, and within 100 yards of the midpoint between 22nd Street and Sheridan Road.

At each of these three locations, the sediment samples will be collected from two depths at each location, 0 to 6 inches and 6 to 12 inches below the Creek bottom. The sediment samples will be collected from two depths at each location, 0 to 6 inches and 6 to 12 inches below the creek bottom using a sediment sampler. The sediment sampler can be used to collect samples, regardless if water is present in the Creek or not. The sediment sampling will be performed as outlined in CEI's SOP for sediment sampling (refer to Section 7.0).

Sediment samples will also be collected from the drainage ditch located north of the EJ&E railroad tracks, located north of the Vacant Lot Site and the Fansteel North Chicago facility.

Two sediment samples will be collected from the drainage ditch at the location indicated on Figure Three at depths of 0 to 6 inches and 6 to 12 inches below the drainage ditch bottom. If staining is evident near the transformers located north of the site, additional samples of the stained soils may be collected.

4.3 Sampling Methodology - All samples will be collected and placed in clean glass jars, vials or bottles with Teflon®-lined lids or septa supplied by the laboratory. The samples will be maintained at a temperature of approximately 4° C in an insulated container. Upon completion of the site sampling, selected samples will be shipped to an accredited environmental analytical laboratory for analysis. The samples will be maintained under standard chain-of-custody procedures. Table One in Attachment B provides a summary of the number of samples to be collected, appropriate sample containers and field parameters to be recorded during the field sampling.

4.3.1 Soil - Thirty-three soil borings will be emplaced at the subject site based on the sampling strategy described above. The borings will be emplaced and sampled using a Geoprobe® Macro Core Soil Sampling System. These soil borings will be advanced using a truck-mounted Geoprobe® Model 6600 and GH-60 hammer. If any of the sampling locations are inaccessible using a truck, a Geoprobe® Model 5400 mounted to a Case® 1840 Bobcat® may need to be employed to complete the soil borings.

Thirty-three soil borings will be advanced to a depth of approximately 20 feet below ground surface (ft bgs). Soil samples will be collected from each boring using a 48-inch stainless steel sampling tube lined with cellulose acetate butyrate (CAB) sampling sleeves. The borings will be continuously sampled and the soil retrieved from the four-foot Geoprobe interval will generally be divided into two samples, each corresponding to a two-foot sample interval. In all soil borings not emplaced through building foundations (25 proposed borings), a soil sample will be collected from 0-12 inches to evaluate the "surface soil" conditions.

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Samples from any one boring will be assigned alphanumeric identification numbers based on the boring number, followed by the depth of the sample collected. The shallowest sample will be given the letter "A," the next "B," etc. (e.g., GP-2A, GP-2B). Any duplicate samples will be followed by the suffix -DUP (i.e., GP-2A-DUP). The geological material associated with each sample will be visually classified and noted on boring logs (refer to Figure Four in Attachment A for sample boring log form).

After the soil samples are collected, any excess cuttings will be containerized (refer to Section 4.4 below for additional information), the boreholes will be filled with bentonite chips, and any borings emplaced through asphalt or concrete paving will be brought back to grade with cement.

All soil samples will also be examined for visual evidence of contamination and field screened using a flame ionization detector (FID) or photoionization detector (PID). The FID and PID are both an effective device for identifying areas where volatile and semi-volatile organic compounds (e.g. oils, solvents, gasoline constituents) may exist. However, it does not identify specific compounds or their concentrations.

Soil samples that will be analyzed for VOCs will be field preserved in accordance with EPA Method 5035 and CEI's field SOPs (refer to Section 7.0). At each sample interval, soil will be weighed and placed into pre-weighed laboratory-supplied containers. Two low level samples should be collected from each interval in the following manner: 5 grams of soil will be weighed and placed in a pre-weighed 40-mL vial containing 5 mL of distilled water, 5 g of sodium bisulfate, and a stir bar. One high level sample should be collected from each interval in the following manner: 25 grams of soil will be weighed and placed in a pre-weighed 2-ounce jar to which 25 mL of methanol (supplied in a vial by the laboratory) is added.

In addition, soil collected from each sample interval will be placed into two, 4-ounce sample jars. These soil samples (in the 4-ounce jars) may be analyzed for percent moisture, Pb, Cd,

Ta, SPLP Pb or pH. If the preserved sample for VOCs exhibits evidence of effervescence, a third, unpreserved, 2-ounce (or 4-ounce) sample jar should be collected and submitted for VOCs analysis. In this instance, the sample jar should be filled as full as practical in order to minimize headspace.

The samples submitted for laboratory analysis will be selected on the basis of lithology and visual observations (i.e. staining), PID or FID screening, and sample depth. For VOCs, the sample interval exhibiting the highest PID or FID reading generally will be submitted for laboratory analysis. Any sample submitted for VOC analysis will also be submitted for percent moisture analysis. Staining, visual appearance and lithology (i.e., slag and fill material) will primarily be used to select the sample from each boring that will be submitted for laboratory analysis of Pb, Cd, Ta, SPLP Pb and pH. Samples from additional intervals may be analyzed for VOCs and/or metals as necessary to define the extent of soil contamination.

As discussed in Section 5.2, Fansteel may propose site-specific remediation objectives. In order to aid the calculation of site-specific remediation objectives, at least five samples will be collected for total organic carbon (TOC) content.

4.3.2 Ground Water - Nine ground water monitoring wells will be installed to a depth of approximately 20 ft bgs. These wells will be installed using a truck-mounted Geoprobe® Model 6600 and GH-60 hammer to drive 3.5-inch diameter well rods into previously completed boreholes. Each well will be constructed using stainless steel well screens and risers. Well screening and casing materials will be steam-cleaned prior to installation. Quartz sand will be placed around the screen to an elevation of 1 foot above the screen. A bentonite seal will be placed above the quartz sand to provide an impermeable seal in the borehole. In order to secure the wells, a stick-up or flush-mounted steel well box will be cemented in place over each well. A sample monitoring well construction diagram is included as Figure Five in Attachment A.

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Prior to development and purging, the static water level, temperature, pH and conductivity of the water in each well will be measured and recorded. Each of the monitoring wells will be developed approximately 48 hours after installation using stainless steel bailers and/or a surge/pump procedure, depending on the amount of water in each well. After development, tubing to accommodate low-flow sampling will be inserted to a bottom depth approximately equivalent to the midpoint of the height of the standing water column, as measured before development. The new, dedicated polyethylene tubing will be secured in each well.

All wells will be sampled on the same day, approximately two weeks after development, following CEI's SOP for low-flow ground water sampling (refer to Section 7.0). Initially, the static water level, temperature, pH and conductivity of the water in each well will be measured and recorded. A peristaltic pump will be connect to the low-flow tubing previously installed in each well. Prior to sampling, a minimum of three well standing water volumes will be pumped from each well, unless the wells are purged dry. The pumping will continue until the water visually appears clear and the conductivity appears to have stabilized.

All sampling equipment will be cleaned with an alconox solution and rinsed with distilled water prior to use at each well. The individual collecting the samples will wear new vinyl gloves during the collection of each sample.

The ground water samples will be pumped directly into the appropriate sample containers. The sample containers and preservation methods are outlined in Table One in Attachment B. All VOC sampling procedures employed will be consistent with Method 5030 of SW-846. Ground water samples targeted for VOCs analysis will be placed in a 40-mL vial preserved with hydrochloric acid (HCl). No headspace is permitted in the VOC samples. If bubbles are observed in the sealed 40-mL vial upon collection, the vial will be discarded in a 55-gallon drum and a new sample vial will be collected. Ground water samples targeted for metals analysis will be placed in a 500-mL plastic bottle preserved with nitric acid (HNO_3). Three times the normal ground water sample volume will be collected from one of the monitoring wells to provide the matrix spike and matrix spike duplicate samples for ground water.

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4.3.3 Sediment - At each proposed sediment sample location, the sediment samples will be collected using a sediment sampler equipped with a plunger. The sediment samples collected for VOCs analysis will be field preserved using EPA Method 5035. Three samples containers (two low level and one high level) will be collected for VOCs analysis, as described in Section 4.3.1. If the field preserved sample exhibits evidence of effervescence, an unpreserved VOC sample should be placed in a 2-ounce or 4-ounce jar, filling the jar as full as practical to minimize headspace.

In addition to the VOC samples, five 4-ounce jars will be collected for each sediment sample (refer to Table One in Attachment B). The sediment sample will be retrieved from two sample depths, 0 to 6 inches and 6 to 12 inches below the creek, bank or ditch bottom.

All sampling equipment will be cleaned with an alconox solution and rinsed with distilled water prior to use at each well. The individual collecting the samples will wear new vinyl gloves during the collection of each sample.

4.4 Decontamination Procedures - In order to preserve the accuracy of the sample results from the Site Investigation, CEI will employ the decontamination procedures for the sampling equipment listed below. These procedures are designed to prevent cross-contamination between samples collected during the Site Investigation. Additional decontamination procedures related to personnel and personnel protective equipment (PPE) are discussed in the Health and Safety Plan (HASP) developed for the Site Investigation (refer to Section 8.0).

- A temporary decontamination area will be constructed and used during the Site Investigation field activities. All steam-cleaning activities will be conducted within this decontamination area. The decontamination area will be constructed to provide containment of any water generated during the steam-cleaning activities.

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- All "down hole" equipment will be steam-cleaned prior to beginning each boring. The equipment which will be steam-cleaned includes Geoprobe® rods and sampler assembly, well screening and well casing materials.

- New Geoprobe® CAB sampling sleeves will be used for each sample interval.

- All samples collected for potential laboratory analysis will be placed into new, laboratory-supplied sample containers.

- The individual(s) handling the samples will change into a new pair of vinyl (or other appropriate) gloves prior to handling and collecting each sample.

Additional QA/QC samples, including duplicates, field and trip blank samples, will be collected and submitted for selected analyses, as discussed in the CEI QAPP (refer to Section 7.0). CEI proposes collecting duplicate samples at a ratio of at least one duplicate sample for every ten samples submitted for immediate laboratory analysis. Field and trip blanks will be collected each day field activities are conducted. Additionally, matrix spike samples will be analyzed at a ratio of approximately one sample to every 20 soil samples initially submitted for laboratory analysis, and one ground water matrix spike sample/matrix spike duplicate sample.

4.5 Investigation Derived Wastes - During the Site Investigation, several different "investigation derived wastes" (IDWs) will be produced. The procedures for handling these IDWs are listed below.

- All soil cuttings generated during the boring and monitoring well installations will be containerized in 55-gallon steel drums. Additionally, any development or purge water from the ground water monitoring wells will be containerized in 55-gallon steel drums.

- All used Geoprobe® CAB sampling sleeves will be placed in 55-gallon steel drums.

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- All decontamination water generated from the steam-cleaning activities will be containerized and transferred to 55-gallon steel drums at the end of each work day.

- Any PPE that requires disposal (i.e. sampling gloves, tyvek, filter cartridges, etc.) will be placed in 55-gallon steel drums.

- Any used or broken sample containers or sampling materials will be placed in 55-gallon steel drums.

All drums will be labeled and staged at the site in areas designated by Fansteel representatives. CEI will mark the contents and applicable dates on each 55-gallon drum using a grease marker or paint. Upon completion of the Site Investigation, and a review of the analytical laboratory results, CEI will assist Fansteel in arranging for the proper disposal of the drums in accordance with applicable rules and regulations.

4.6 Analytical Parameters - All soil, ground water and sediment samples will be analyzed using the U.S. Environmental Protection Agency's (EPA) Test Methods of Evaluating Solid Wastes, Third Edition, (SW-486). The analytical methods and preservation requirements are listed on Table One in Attachment B.

The laboratory procedures, quality assurance and quality control measures associated with the analytical methods are detailed in the Great Lakes Analytical Quality Assurance Program (refer to Section 7.0).

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5.0 REMEDIATION OBJECTIVES

5.1 Action Levels - The results of the Site Investigation will be compared to the Tier 1 remediation objectives for industrial/commercial properties with Class I ground water that are listed in the Illinois Pollution Control Board's *Tiered Approach to Corrective Action Objectives*, "TACO" (35 Ill. Adm. Code 742). TACO incorporates a risk-based approach to determining site-specific remediation objectives. The TACO Tier 1 remediation objectives represent the most stringent remediation objectives that would apply to a remediation site. Generally, TACO Tier 1 remediation objectives are established for the various potential exposure pathways (i.e. ingestion, inhalation). For compounds for which a Tier 1 remediation objective has not been established, the reporting limit for the compounds will be applied as the action level.

Fansteel will apply the most stringent of the Tier 1 remediation objectives for industrial/commercial properties with Class I ground water for each compound as the action level for that compound. The results of the proposed investigation will be compared to the action levels. Site-specific remediation objectives will be determined by CEI for compound concentrations that exceed the action level. As discussed in Section 5.2 below, the site-specific remediation objectives will be determined using TACO Tier 1, Tier 2 and/or Tier 3 analyses.

5.1.1 VOCs - The most stringent of the TACO Tier 1 remediation objectives for industrial/commercial properties with Class I ground water will serve as the action levels for VOCs. The VOC action levels for soil/sediment and ground water are included in Tables Two and Six, respectively.

5.1.2 TAL Metals/Ta/CN - The most stringent of the TACO Tier 1 remediation objectives for industrial/commercial properties with Class I ground water and pH-specific remediation objectives for inorganics will serve as the action levels for metals and cyanide.

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The metals and cyanide action levels for soil/sediment and ground water are included in Tables Three and Seven, respectively.

5.1.3 PNAs - The most stringent of the TACO Tier 1 remediation objectives for industrial/commercial properties with Class I ground water will be applied as the action levels for PNAs. The action levels for PNAs in the sediment are listed in Table Four.

5.1.4 PCBs/Pesticides - The most stringent of the TACO Tier 1 remediation objectives for industrial/commercial properties with Class I ground water will be applied as the action levels for PCBs and pesticides. The action levels for PCBs and pesticides in the sediment are listed in Table Five.

5.2 Site-Specific Remediation Objectives - Upon a review of the analytical results from the proposed Site Investigation, CEI will conduct Tier 1, Tier 2 and/or Tier 3 analyses to determine site-specific remediation objectives. Fansteel will conduct additional investigations as necessary, to determine the extent of contamination for contaminants potentially affecting the Vacant Lot Site, with respect to these site-specific remediation objectives.

Fansteel may also contact the IEPA Office of Chemical Safety (OCS) to gather information and guidance for establishing remediation objectives for compounds for which a TACO Tier 1 remediation objective has not been established (i.e., tantalum). The process for establishing remediation objectives will also consider human health and ecological risk-based assessments.

The tiered analyses, development of the site-specific remediation objectives and associated extent of contamination investigation will be included in the *Site Investigation Report*.

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6.0 SITE INVESTIGATION PROJECT MANAGEMENT PLAN

This Project Management Plan contains a summary and discussion of the approach and objectives for conducting the Site Investigation at the Fansteel North Chicago facility. A schedule and the qualifications of key CEI personnel that will work on this project are also included in this Plan.

6.1 Objectives - The objectives of the Site Investigation are to determine the nature and extent of potential soil and ground water contamination at the Fansteel North Chicago facility that may be impacting the adjacent Vacant Lot Site, and to identify potential off-site sources that may be contributing to the contamination detected at the Vacant Lot Site and in Pettibone Creek. Additionally, the Site Investigation includes a characterization of sediment samples collected from Pettibone Creek at locations downstream the Vacant Lot Site.

The results of the investigation will be detailed in the *Site Investigation Report*. Within the *Site Investigation Report*, CEI will compare the results of the Site Investigation to the project action levels that are equivalent to the TACO Tier 1 remediation objectives for industrial/ commercial with Class I ground water. For compounds exceeding the action levels, CEI will propose site-specific remediation objectives and conduct additional investigations to determine the extent of contamination that may be affecting the Vacant Lot Site, with respect to the proposed site-specific remediation objectives. The *Site Investigation Report* therefore will include: the results of the soil, ground water and sediment sampling; a comparison of the results to the action levels, the development of site-specific remediation objectives; and the delineation of the extent of contamination which may be affecting the Vacant Lot Site.

If contaminant concentrations exceed the action levels, Fansteel may perform geological and/or hydrogeological testing to determine site-specific parameters that may be used to calculate site-specific remediation objectives using the Soil Screening Level (SSL) model or Risked Based Corrective Action (RBCA) model that are included in TACO.

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If, during the course of the Site Investigation and associated extent of contamination delineations, it is determined that contamination at the Fansteel North Chicago facility has impacted the adjacent Vacant Lot Site and remediation at the Fansteel North Chicago facility is appropriate, Fansteel will research viable remediation alternatives and may prepare an Engineering Evaluation and Cost Assessment (EE/CA) Report.

6.2 Technical Approach - The overall strategy for conducting the Site Investigation is based on a site-wide soil sampling with perimeter ground water monitoring. The Site Investigation activities will include emplacing 33 borings across the site to a depth of approximately 20 ft bgs. Selected samples from each boring will be submitted for analysis of VOCs, PNAs, Pb, Cd, Ta, pH and SPLP Pb. The proposed boring locations are shown in Figure Two in Attachment A.

Nine of the borings will be converted to ground water monitoring wells, each screened from approximately 10 to 20 ft bgs. The ground water monitoring wells will be developed and sampled for VOCs, Pb, Cd and Ta. Measurements of the static water level and from a topographic survey of the monitoring well elevations will be used to calculate the approximate ground water flow direction for the site. The proposed monitoring well locations are shown in Figure Two in Attachment A.

In order to assess the potential contribution of the Fansteel North Chicago facility's outfall discharges to Pettibone Creek, Fansteel proposes collecting sediment samples from Pettibone Creek at three Creek locations. Samples will be collected from two depths at each location, 0 to 6 inches and 6 to 12 inches below the creek bottom. These six samples (two depths from three creek locations) will be analyzed for TAL metals, Ta, CN, pH, SPLP Pb, PNAs, PCBs and pesticides (refer to Table One, Attachment B). The outfall locations are shown in Figure Three in Attachment A.

The EJ&E railroad tracks run along the north border of the Vacant Lot Site and the Fansteel North Chicago facility. Immediately north of these tracks is a drainage ditch which appears

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to flow in a west direction and drains into Pettibone Creek just north of the Vacant Lot Site. A fenced area containing a bank of ComEd transformers where staining was observed is located along this drainage ditch. In order to evaluate whether possible PCB-containing surface water runoff from the transformer bank and/or PNA contamination from the nearby roadway has flowed into the ditch and then to Pettibone Creek, two sediment samples will be collected from the drainage ditch or associated bank at depths of 0 to 6 inches and 6-12 inches below the drainage ditch bottom. These two samples (two depths from one location) will be analyzed for TAL metals, Ta, CN, pH, SPLP Pb, PNAs, and PCBs. The proposed drainage ditch sampling location is shown in Figure Three in Attachment A.

6.3 Schedule - The Site Investigation will be initiated upon receiving EPA approval of this *Site Investigation Work Plan.* The schedule to complete the Site Investigation and associated *Site Investigation Report* is outlined in Table Two in Attachment A. As shown in Table Eight, the *Site Investigation Report* should be completed within approximately 48 weeks. It should be noted, however, that this time estimate may change based on EPA comments and the amount of additional investigation(s) required to define the extent of the contaminant plume(s) that may be impacting the Vacant Lot Site.

6.4 Project Personnel - CEI's project management team involved in developing the *Site Investigation Work Plan* and conducting investigations at the facility includes the following individuals:

Project Director	Edward E. Garske, CHMM
Project Manager	Margaret M. Karolyi, P.E.
Project Engineer	Kenneth W. James, P.E.

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Edward Garske, Project Director, will have final responsibility and authority for all work performed. Mr. Garske will assure the resources required to successfully complete the project are committed.

The Project Manager, Margaret Karolyi, is the key manager of project activities and is responsible for:

- Managing project operations and activities.
- Conducting technical review of each task being performed.
- Maintaining clear and effective communication with Fansteel's Project Manager.
- Working with Fansteel in project scoping and planning.
- Ensuring appropriate technical resources are utilized for each task.
- Ensuring field activities are conducted in accordance with program Health and Safety and QA/QC requirements.
- Ensuring proper technical consultation is provided.
- Maintaining overall project technical continuity.
- Controlling costs and schedule aspects of all project activities.

The Project Engineer, Kenneth James, will be responsible for maintaining the quality of all engineering activities associated with the project in addition to establishing detailed task specifications including schedules and estimates of labor and material costs.

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Project Staff will include the following CEI personnel:

- Bruce A. Shabino, Staff Geologist
- Lisa P. Meagher, Staff Geologist
- Stephen Pl Allen, Staff Geologist
- Christopher Harvey, Staff Engineer
- Kristin M. O'Brien, Staff Scientist
- Paul A. Micari, Staff Scientist

The qualifications of the senior CEI staff members are included in Attachment C.

7.0 QUALITY ASSURANCE PROJECT PLAN

CEI prepared a Quality Assurance Project Plan (QAPP) for the Site Investigation at the Fansteel North Chicago facility. The QAPP presents the organization, policies, QA/QC procedures, objectives and activities that will be utilized to ensure the data provided as a result of the Site Investigation at the facility are representative of site conditions.

SOPs for field procedures, sample handling and storage, chain-of-custody, and laboratory and field analyses are described in the QAPP. The QA/QC procedures are structured in accordance with applicable technical standards, US EPA's requirements, regulations and guidance. This QAPP was prepared largely in accordance with a guidance manual entitled "Region 5 Model Quality Assurance Project Plan," Revision 1, May 1996. CEI's QAPP has been submitted under separate cover for EPA review and approval.

Additionally, Great Lakes Analytical has provided a Quality Assurance Program that outlines the laboratory protocols and EPA Methods used for analyses, in addition to the QA/QC procedures employed by the laboratory. The Great Lakes Analytical Quality Assurance Program has been submitted for EPA review and approval, under separate cover.

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8.0 HEALTH AND SAFETY PLAN

It is the policy of CEI and Fansteel to provide a safe work environment for all their employees. No phase of operations or administration is of greater importance than injury and illness prevention. Safety takes precedence over expediency or shortcuts.

The Site Health and Safety Plan (HASP) prepared for the Site Investigation at the Fansteel North Chicago facility prescribes the procedures that must be followed by all site personnel while on the project site. Operational changes which could affect the health or safety of personnel, the community, or the environment will not be made without prior approval of Fansteel, the CEI Project Manager and CEI health and safety personnel.

The provisions of this plan are mandatory to all CEI personnel and subcontractors assigned to the project. CEI requires all visitors to any of the work sites to abide by these procedures. Work conditions can change as operations progress. The Health and Safety Officer will provide written addenda to this HASP when changes warrant. No changes to the plans will be implemented without prior approval of the Health and Safety Officer or his/her authorized representative.

The Site Health and Safety Plan has been submitted under separate cover for EPA review and approval.

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ATTACHMENT A
Figures

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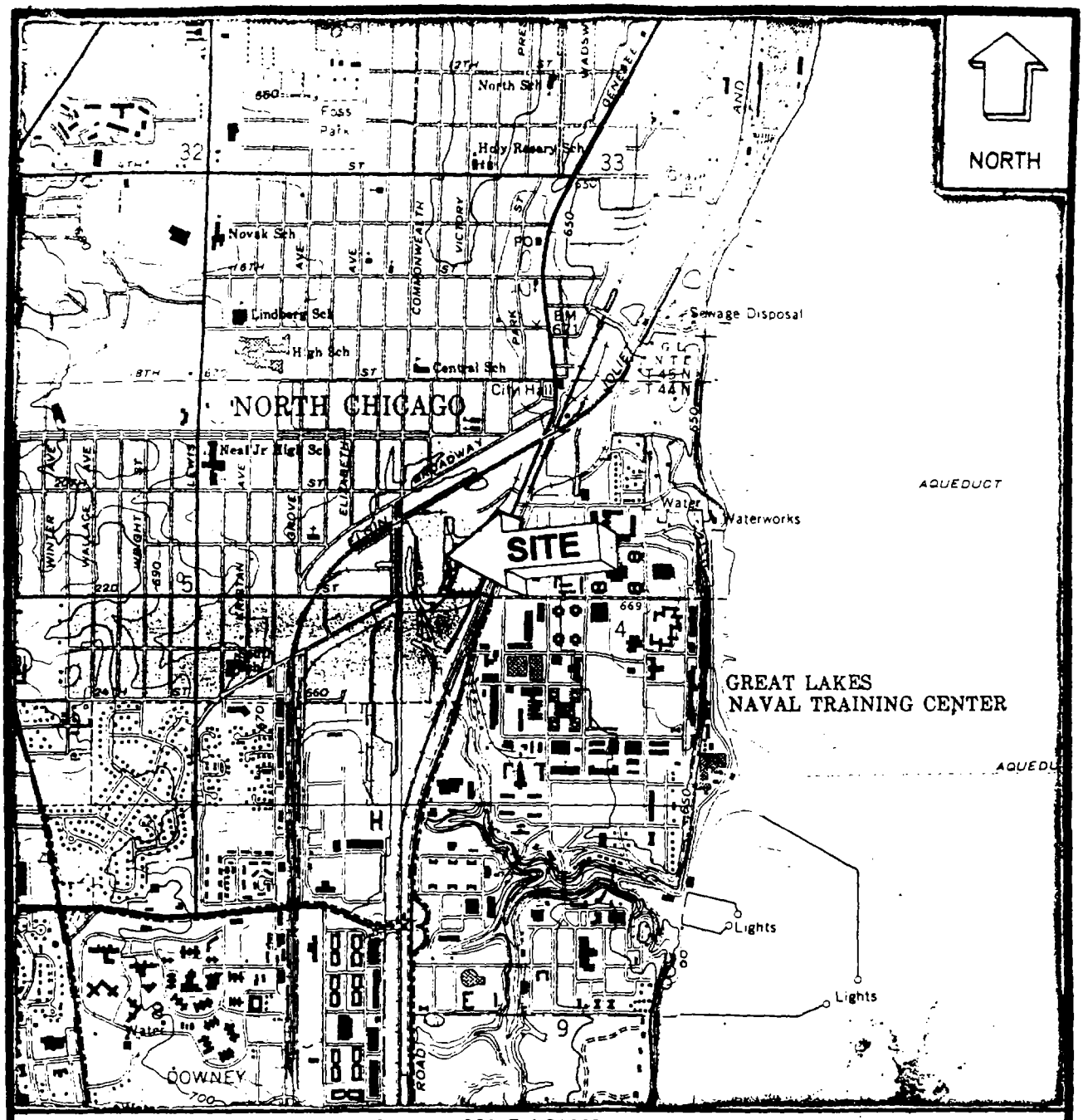

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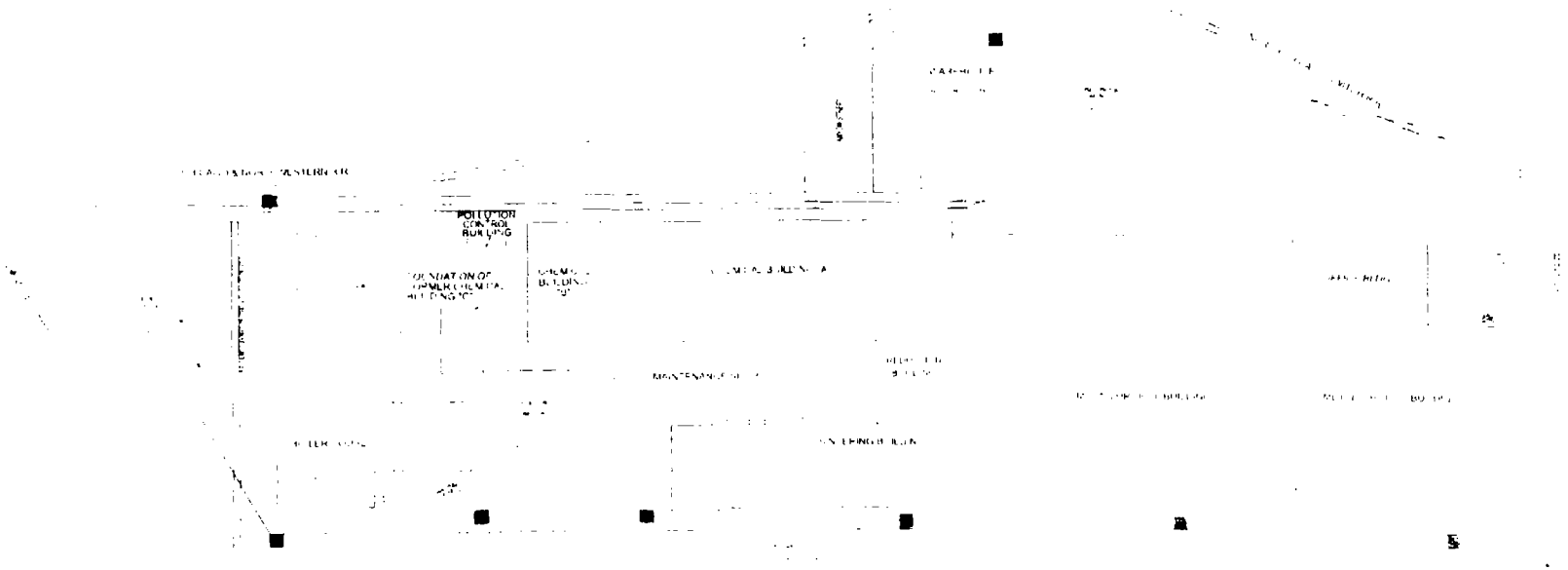
FIGURE ONE
SITE LOCATION

Developed from U.S.G.S. 7.5 Minute Topographic Quadrangle Map referenced in Text



NOTE:
THIS FIGURE IS BASED ON A DRAWING PREPARED BY FACTORY INSURANCE ASSOCIATION AND DATED 2/9/60

LEGEND:

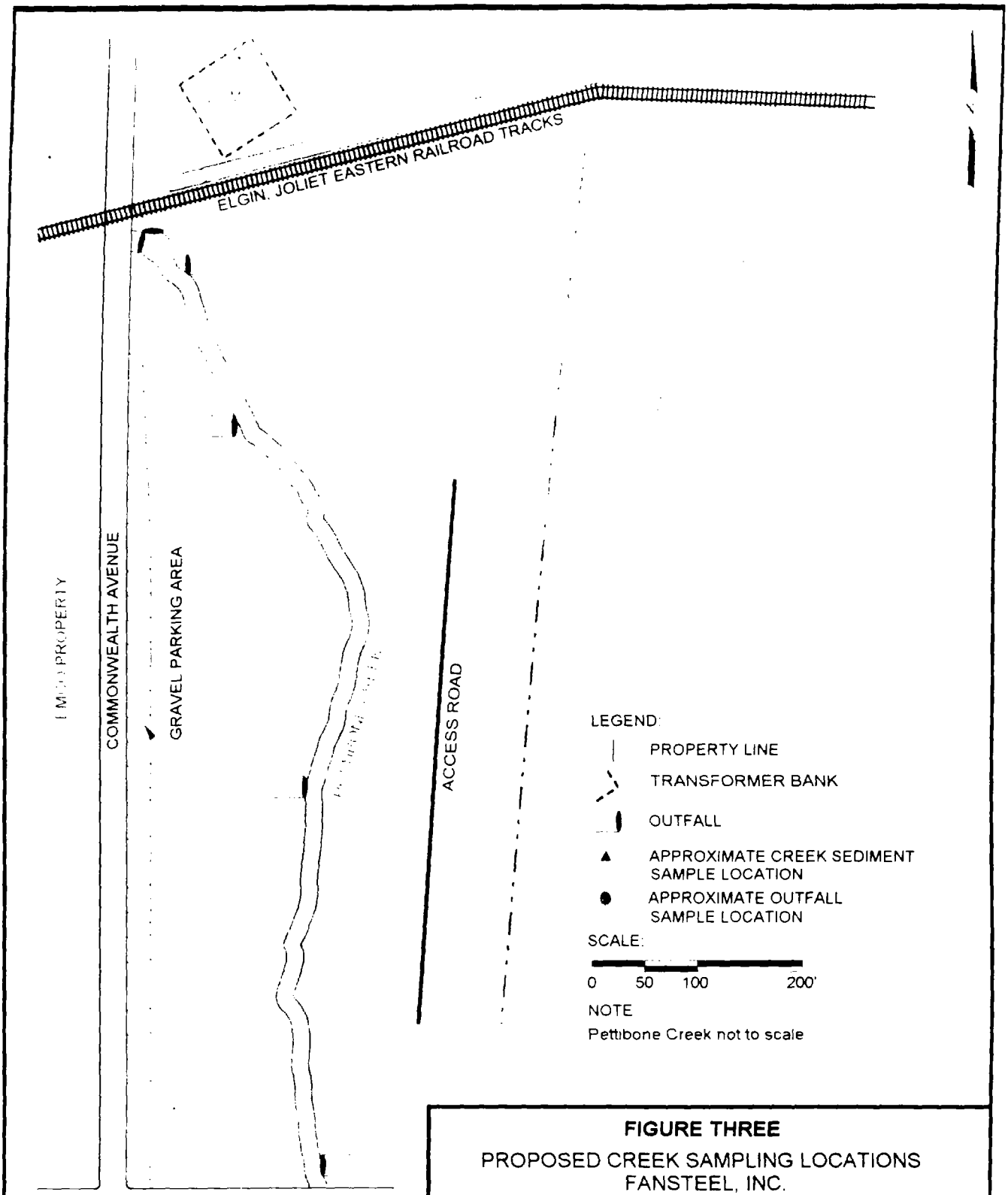
- PROPOSED SOIL BORING LOCATION
- PROPOSED MONITORING WELL LOCATION

SCALE:

0 50 100 200'

FIGURE TWO
PROPOSED SITE SAMPLING LOCATIONS
FANSTEEL, INC
One Tantalum Place
North Chicago, Illinois

CARLSON ENVIRONMENTAL, INC.



NOTE
Three creek sediment sample locations are planned south of 22nd Street.
Refer to Section 4.2.3 of Work Plan

FIGURE THREE

PROPOSED CREEK SAMPLING LOCATIONS
FANSTEEL, INC.
One Tantalum Place
North Chicago, Illinois

CARLSON ENVIRONMENTAL, INC.
[illegible] RANDOLPH STREET
[illegible] CHICAGO, ILLINOIS
312 346-2140

DRW	JLV
PN	9566
DATE	04-02-98
SCALE	None

P:\95\9566\creek.dgn

FIGURE FOUR - Sample Boring Log Form

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Log of Boring SB-

(Page 1 of 1)

Fansteel North Chicago, IL	Date & Time Started Date & Time Finished Logged By Depth to water	Surface Elevation Driller Drill Method Sample Method	NA Geoprobe
PN 9566B			

Depth in feet	Sample Number	Depth Interval	Time	Recov. (inches)	PID (units)	Depth in feet	Graphic Log	USCS Log	Materials Description	Remarks
0						0				
	SB- A	0-2								
2						2				
	SB- B	2-4								
4						4				
	SB- C	4-6								
6						6				
	SB- D	6-8								
8						8				
	SB- E	8-10								
10						10				
	SB- F	10-12								
12						12				
	SB- G	12-14								
14						14				
	SB- H	14-16								
16						16				
	SB- I	16-18								
18						18				
	SB- J	18-20								
20						20				
22						22				

09-24-1998 m:\mtech\borings\9566\9566bisb.bor

FIGURE FIVE - Sample Monitoring Well Construction Diagram

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Chicago, Illinois 60606
312/346-2140

Log of Boring MW-

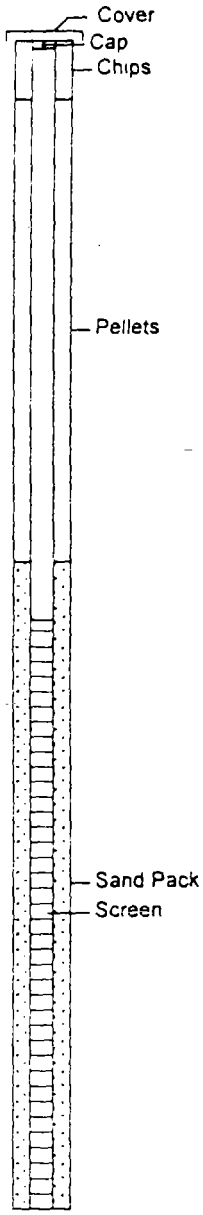
(Page 1 of 1)

Fansteel
North Chicago, IL

PN 9566B

Installation Date		Surface Elevation	---
Drilling Method	Geoprobe	Casing Elevation	---
Drilling Contractor		Casing Stickup	---
Sampling Method		Surveyed	No

Depth in Feet	Well Construction Information
0	WELL CONSTRUCTION
	Date Compl.
	Hole Diameter 1.75"
	Drilling Fluid none
	Company Rep CEI
2	WELL CASING
	Material Stainless Steel
	Diameter 1 in.
	WELL SCREEN
4	Material Stainless Steel
	Diameter 1 in
	Opening .010 slot
	WELL MATERIALS
6	Sand Pack #5 quartz
	Annulus Seal Bentonite Pellets
	Grout Cement
	COUNTY/STATE Lake County, Il
8	
	Development Technique(s) and Dates
10	Static Depth to Water Date
	Static Depth to Water(feet)
12	Ground Water Elevation.
	Water Removed During Development(gals)
	Well Purpose: To collect ground water sampling.
14	
16	
18	
20	
22	



Graphic Log	Materials Description	Depth in Feet
		0
		2
		4
		6
		8
		10
		12
		14
		16
		18
		20
		22

10-06-1998 m:\mtech\borings\19566\19566bvmw-.bor

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ATTACHMENT B
Tables

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TABLE ONE: Site Investigation Sampling Summary

Fansteel, Inc.

Matrix	Parameter	EPA SW-846 Method	Sample Collection Points	Minimum Number of Samples	Number of Field Duplicates	MS/MSD Samples	Number and Type of Sample Containers	Preservation Method	Holding Time	Field Parameters
Soil	VOCs	5035/ 8260A	33 Borings	66 plus 25 from 0-12 inches	9	9	two, pre-weighed 40 mL glass vials	5 mL distilled H_2O with 5 g $NaHSO_4$ and stir bar	14 days	location, boring log, FID/PID reading, visual classification, note of obvious staining or odor
							one, pre-weighed 2-oz glass jar	25 mL CH_3OH	14 days	
							one, 2- or 4 oz glass jar *only collect if sample effervece*	Cool	14 days	
	Percent Moisture	7.3.3.1.5					one 4-oz glass jar	Cool	7 days	
	PNAs	8310		33 plus 25 from 0-12 inches	6	6			14 days	
	Pb, Cd, & Ta	3050/ 6010/ 7000					one 4-oz glass jar	Cool	6 months	
	SPLP Pb	1312/ 7421							28 days	
	pH	9045							immediate	
	Ta	3050/ 6010/ 7000					one 4-oz glass jar	Cool	6 months	
	TOC	ASTM Method D2974-87	Selected Soil Borings	5	0	0	one 4-oz glass jar	Cool	7 days	

TABLE ONE: Site Investigation Sampling Summary
Fansteel, Inc.

Matrix	Parameter	EPA SW-846 Method	Sample Collection Points	Minimum Number of Samples	Number of Field Duplicates	MS/MSD Samples	Number and Type of Sample Containers	Preservation Method	Holding Time	Field Parameters
Ground Water	VOCs	5030/ 8260A	9 Monitoring Wells	9	1	1	three glass 40-mL vials	Cool, HCl	14 days	location, conductivity, pH, temperature, water level
	Pb & Cd	3001/3020/ 6010/ 7000 Series					two 500-mL plastic	Cool, HNO_3	6 months	
	Ta						two 500-mL plastic	Cool, HNO_3	6 months	

TABLE ONE: Site Investigation Sampling Summary

Fansteel, Inc.

Matrix	Parameter	EPA SW-846 Method	Sample Collection Points	Minimum Number of Samples	Number of Field Duplicates	MS/MSD Samples	Number and Type of Sample Containers	Preservation Method	Holding Time	Field Parameters
Creek Sediment	VOCs	5035/ 8260A	3 Creek Bottom Locations	6	1	1	two, pre-weighed 40 mL glass vials	5 mL distilled H_2O with 5 g $NaHSO_4$ and stir bar	14 days	location, presence of water, FID/PID reading, note of obvious odor or staining
							one, pre-weighed 2-oz glass jar	25 mL CH_3OH	14 days	
							one, 2- or 4 oz glass jar *only collect if sample efferveces*	Cool	14 days	
	Percent Moisture	7.3.3.1.5					one 4-oz glass jar	Cool	7 days	
	Ta	3050/ 6010/ 7000 Series					one 4-oz glass jar	Cool	6 months	
	23 TAL Metals						one 4-oz glass jar	Cool	6 months (except Hg is 28 days)	
	SPLP Pb	1312/ 7421					one 4-oz glass jar	Cool	28 days	
	pH	9045							immediate	
	CN	9012							14 days	
	PNAs	8310					one 4-oz glass jar	Cool	14 days	
	PCBs	8082								
	Pesticides	8081								

TABLE ONE: Site Investigation Sampling Summary

Fansteel, Inc.

Matrix	Parameter	EPA SW-846 Method	Sample Collection Points	Minimum Number of Samples	Number of Field Duplicates	MS/MSD Samples	Number and Type of Sample Containers	Preservation Method	Holding Time	Field Parameters
Ditch Sediment	VOCs	5035/ 8260A	One Ditch Locaiton	2	0	0	two, pre-weighed 40 mL glass vials	5 mL distilled H_2O with 5 g $NaHSO_4$ and stir bar	14 days	location, presence of water, FID/PID reading, note of obvious odor or staining
							one, pre-weighed 2-oz glass jar	25 mL CH_3OH	14 days	
							one, 2- or 4 oz glass jar *only collect if sample efferveces*	Cool	14 days	
	Percent Moisture	7.3.3.1.5					one 4-oz glass jar	Cool	7 days	
	Ta	3050/ 6010/ 7000 Series					one 4-oz glass jar	Cool	6 months	
	23 TAL Metals						one 4-oz glass jar	Cool	6 months (except Hg is 28 days)	
	SPLP Pb	1312/ 7421					one 4-oz glass jar	Cool	28 days	
	pH	9045							immediate	
	CN	9012							14 days	
	PNAs	8310					one 4-oz glass jar	Cool	14 days	
	PCBs	8082			1	1				

TABLE ONE: Site Investigation Sampling Summary

Fansteel, Inc.

Matrix	Parameter	EPA SW-846 Method	Sample Collection Points	Minimum Number of Samples	Number of Field Duplicates	MS/MSD Samples	Number and Type of Sample Containers	Preservation Method	Holding Time	Field Parameters
Field Blanks (Water)	VOCs	5030/ 8260A	distilled water poured over a clean sampling instrument (e.g. split spoon or bailer)	One sample per day for each of the parameters that the samples collected on that day will also be analyzed for	N/A	N/A	3 - 40 mL vials	Cool	14 days	N/A
	Ta	3010/3020/ 6010/ 7000 Series					two 500-mL plastic	Cool, HNO_3	6 months	
	Pb & Cd				Note: do not submit sample if submitting 23 TAL Metals sample		two 500-mL plastic	Cool, HNO_3	6 months	
	23 TAL Metals								28 days	
	SPLP Pb	1312/ 7421			N/A	N/A				
	CN	9012					two 500-mL plastic	Cool, NaOH	14 days	
	PCBs	8082					2, 1L amber	Cool		
	Pesticides	8081								
	PNAs	8310					2, 1L amber			

TABLE ONE: Site Investigation Sampling Summary

Fansteel, Inc.

Matrix	Parameter	EPA SW-846 Method	Sample Collection Points	Minimum Number of Samples	Number of Field Duplicates	MS/MSD Samples	Number and Type of Sample Containers	Preservation Method	Holding Time	Field Parameters
Trip Blanks (Water)	VOCs	8260A	prepared by analytical laboratory using deionized water	One sample per day	N/A	N/A	40 mL vial	HCl	14 days	N/A

TABLE TWO: Soil and Sediment Action Levels -VOCs

Fansteel, Inc.

All concentrations are expressed in milligrams per kilogram (mg/kg)

ANALYTE	ACTION LEVEL [1]	REPORTING LIMIT [2]
Acetone	16	0.025
Benzene	0.03	0.005
Bromobenzene	detect	0.005
Bromochloromethane	detect	0.005
Bromodichloromethane	0.6	0.005
Bromoform	0.8	0.005
Bromomethane	detect	0.005
2-Butanone	detect	0.01
n-Butylbenzene	detect	0.005
sec-Butylbenzene	detect	0.005
tert-Butylbenzene	detect	0.005
Carbon disulfide	9	0.005
Carbon tetrachloride	0.07	0.005
Chlorobenzene	1	0.005
Chloroethane	detect	0.005
Chloroform	0.6	0.005
Chloromethane	detect	0.005
2-Chlorotoluene	detect	0.005
4-Chlorotoluene	detect	0.005
Dibromochloromethane	0.4	0.005
1,2-Dibromo-3-chloropropane	0.002	0.005
1,2-Dibromoethane	0.0004	0.005
Dibromomethane	detect	0.005
1,2-Dichlorobenzene	17.0	0.005
1,3-Dichlorobenzene	detect	0.005
1,4-Dichlorobenzene	2.0	0.005
Dichlorodifluoromethane	detect	0.005
1,1-Dichloroethane	23	0.005
1,2-Dichloroethane	0.02	0.005
1,1-Dichloroethene	0.06	0.005
cis-1,2-Dichloroethene	0.4	0.005
trans-1,2-Dichloroethene	0.7	0.005
1,2-Dichloropropane	0.03	0.005
1,3-Dichloropropane	0.004	0.005
2,2-Dichloropropane	detect	0.005
1,1-Dichloropropane	detect	0.005
cis-1,3-Dichlropropene	20 (sum of cis- and trans-)	0.005
trans-1,3-Dichlropropene		0.005
Diisopropyl ether	detect	0.005
Ethylbenzene	13	0.005
Hexachlorobutadiene	detect	0.005
2-Hexanone	detect	0.01
Isopropylbenzene	detect	0.005
4-Isopropyltoluene	detect	0.005
Methyl iodine	detect	0.005
Methylene chloride	0.02	0.005
4-Methyl-2-pentanone	detect	0.01

TABLE TWO: Soil and Sediment Action Levels -VOCs

Fansteel, Inc.

All concentrations are expressed in milligrams per kilogram (mg/kg)

ANALYTE	ACTION LEVEL [1]	REPORTING LIMIT [2]
Methyl-tert-butyl-ether	detect	0.005
Napthalene	84	0.005
n-Propylbenzene	detect	0.005
Styrene	4	0.005
1,1,1,2-Tetrachloroethane	detect	0.005
1,1,2,2-Tetrachloroethane	detect	0.005
Tetrachloroethene	0.06	0.005
Toluene	12	0.005
1,2,3-Trichlorobenzene	detect	0.005
1,2,4-Trichlorobenzene	5	0.005
1,1,1-Trichloroethane	2	0.005
1,1,2-Trichloroethane	0.02	0.005
Trichloroethene	0.06	0.005
Trichlorofluoromethane	detect	0.005
1,2,3-Trichloropropane	detect	0.005
1,1,2-Cl3-1,2,2-F3ethane	detect	0.005
1,2,4-Trimethylbenzene	detect	0.005
1,3,5-Trimethylbenzene	detect	0.005
Vinyl acetate	10.0	0.005
Vinyl chloride	0.01	0.005
Total xylenes	150	0.01

[1] Action Level represents the most stringent of the TACO Tier 1 remediation objectives for industrial/commercial properties with Class I ground water.

[2] Reporting Limit represents the analytical laboratory reporting limit (refer to GLA's QAPP for more information).

detect - Since a TACO Tier 1 remediation objective has not been established, the reporting limit will be applied as the action level.

TABLE THREE: Soil and Sediment Action Levels -TAL Metals/Ta/CN

Fansteel, Inc.

All concentrations are expressed in milligrams per kilogram (mg/kg)

ANALYTE	ACTION LEVEL [1]	REPORTING LIMIT [2]
Aluminum	detect	10
Arsenic	3	2.5
Antimony	5	5.0
Barium	260	25
Beryllium	1	0.50
Cadmium	1.0	0.50
Calcium	detect	10
Chromium	28	0.50
Cobalt	12,000	2.5
Copper	330	2.5
Iron	detect	2.5
Lead	400	2.5
Magnesium	detect	10
Manganese	8,700	2.5
Mercury	0.01	0.01
Nickel	20	2.5
Potassium	detect	10
Selenium	2.4	0.50
Silver	0.24	2.5
Sodium	detect	10
Tantalum	detect	5.0
Thallium	1.6	1.6
Vanadium	980	2.5
Zinc	1,000	25
CN	4,100	0.25
SPLP Lead	0.0075	0.0075

[1] Action Level represents the most stringent of the TACO Tier 1 remediation objectives for industrial/commercial properties with Class I ground water.

[2] Reporting Limit represents the analytical laboratory reporting limit (refer to GLA's QAPP for more information).

detect - Since a TACO Tier 1 remediation objective has not been established, the reporting limit will be applied as the action level.

TABLE FOUR: Soil and Sediment Action Levels - PNAs

Fansteel, Inc.

All concentrations are expressed in milligrams per kilogram (mg/kg).

ANALYTE	ACTION LEVEL [1]	REPORTING LIMIT [2]
Acenaphthene	570	0.2
Acenaphthylene	detect	0.0087
Anthracene	12,000	0.0087
Benzo[a]anthracene	2	0.0087
Benzo[a]pyrene	0.8	0.0087
Benzo[b]fluoranthene	5	0.0087
Benzo[g,h,i]perylene	detect	0.0087
Benzo[k]fluoranthene	49	0.0087
Chrysene	160	0.0087
Dibenzo[a,h]anthracene	0.8	0.0087
Fluoranthene	4,300	0.0087
Fluorene	560	0.0087
Indeno[1,2,3cd]pyrene	8	0.0087
Naphthalene	84	0.0087
Phenanthrene	detect	0.0087
Pyrene	4,200	0.0087

[1] Action Level represents the most stringent of the TACO Tier 1 remediation objectives for industrial/commercial properties with Class I ground water.

[2] Reporting Limit represents the analytical laboratory reporting limit (refer to GLA's QAPP for more information).

detect - Since a TACO Tier 1 remediation objective has not been established, the reporting limit will be applied as the action level.

TABLE FIVE: Sediment Action Levels - PCBs/Pesticides

Fansteel, Inc.

All concentrations are expressed in milligrams per kilogram (mg/kg).

ANALYTE	ACTION LEVEL [1]	REPORTING LIMIT [2]
Aldrin	0.3	0.0010
alpha-BHC	detect	0.0010
beta-BHC	detect	0.0010
delta-BHC	detect	0.0010
gamma-BHC (Lindane)	detect	0.0010
Chlordane	4	0.02
4,4'-DDD	16	0.0060
4,4'-DDE	17	0.0020
4,4'-DDT	17	0.0060
Dieldrin	0.0013	0.0020
Endosulfan I	18	0.0020
Endosulfan II	18	0.0020
Endosulfan sulfate	detect	0.0060
Endrin	1	0.0020
Endrin aldehyde	detect	0.0060
Heptachlor	detect	0.0010
Heptachlor epoxide	1	0.0010
Methoxychlor	160	0.02
Aroclor 1016	detect	0.025
Aroclor 1260	detect	0.025
Aroclor 1221 [3]	detect	0.025
Aroclor 1232 [3]	detect	0.025
Aroclor 1242 [3]	detect	0.025
Aroclor 1248 [3]	detect	0.025
Aroclor 1254 [3]	detect	0.025
Toxaphene	5.2	0.08

[1] Action Level represents the most stringent of the TACO Tier 1 remediation objectives for industrial/commercial properties with Class I ground water.

[2] Reporting Limit represents the analytical laboratory reporting limit (refer to GLA's QAPP for more information).

[3] This compound is a multi-component analyte. The limits for this analyte are based on the lowest concentration at which pattern recognition can be performed.

detect - Since a TACO Tier 1 remediation objective has not been established, the reporting limit will be applied as the action level.

TABLE SIX: Ground Water Action Levels -VOCs

Fansteel, Inc.

All concentrations are expressed in milligrams per liter (mg/L)

ANALYTE	ACTION LEVEL [1]	REPORTING LIMIT [2]
Acetone	0.7	0.01
Benzene	0.005	0.002
Bromobenzene	detect	0.002
Bromochloromethane	detect	0.002
Bromodichlromethane	0.00002	0.002
Bromoform	0.0002	0.002
Bromomethane	detect	0.002
2-Butanone	detect	0.01
n-Butylbenzene	detect	0.002
sec-Butylbenzene	detect	0.002
tert-Butylbenzene	detect	0.002
Carbon disulfide	0.7	0.002
Carbon tetrachloride	0.005	0.002
Chlorobenzene	0.1	0.002
Chloroethane	detect	0.002
Chloroform	0.00002	0.002
Chloromethane	detect	0.002
2-Chlorotoluene	detect	0.002
4-Chlorotoluene	detect	0.002
Dibromochloromethane	0.14	0.002
1,2-Dibromo-3-chloropropane	0.0002	0.002
1,2-Dibromoethane	0.00005	0.002
Dibromomethane	detect	0.002
1,2-Dichlorobenzene	0.6	0.002
1,3-Dichlorobenzene	detect	0.002
1,4-Dichlorobenzene	0.075	0.002
Dichlorodifluoromethane	detect	0.002
1,1-Dichloroethane	0.7	0.002
1,2-Dichloroethane	0.005	0.002
1,1-Dichloroethene	0.007	0.002
cis-1,2-Dichloroethene	0.07	0.002
trans-1,2-Dichloroethene	0.1	0.002
1,2-Dichloropropane	0.005	0.002
1,3-Dichloropropane	detect	0.002
2,2-Dichloropropane	detect	0.002
1,1-Dichloropropane	detect	0.002
cis-1,3-Dichlropropene	0.001	0.002
trans-1,3-Dichlropropene	(sum of cis- and trans-)	0.002
Diisopropyl ether	detect	0.002
Ethylbenzene	0.7	0.002
Hexachlorobutadiene	detect	0.002
2-Hexanone	detect	0.01
Isopropylbenzene	detect	0.002
4-Isopropyltoluene	detect	0.002
Methyl iodine	detect	0.002
Methylene chloride	0.005	0.002
4-Menthyl-2-pentanone	detect	0.01

TABLE SIX: Ground Water Action Levels -VOCs

Fansteel, Inc.

All concentrations are expressed in milligrams per liter (mg/L)

ANALYTE	ACTION LEVEL [1]	REPORTING LIMIT [2]
Methyl-tert-butyl ether	detect	0.002
Napthalene	0.0035	0.002
n-Propylbenzene	detect	0.002
Styrene	0.1	0.002
1,1,1,2-Tetrachloroethane	detect	0.002
1,1,2,2-Tetrachloroethane	detect	0.002
Tetrachloroethene	0.005	0.002
Toluene	1.0	0.002
1,2,3-Trichlorobenzene	detect	0.002
1,2,4-Trichlorobenzene	0.1	0.002
1,1,1-Trichloroethane	0.2	0.002
1,1,2-Trichloroethane	0.005	0.002
Trichloroethene	0.005	0.002
Trichlorofluoromethane	detect	0.002
1,2,3-Trichloropropane	detect	0.002
1,1,2-Cl3-1,2,2-F3ethane	detect	0.002
1,2,4-Trimethylbenzene	detect	0.002
1,3,5-Trimethylbenzene	detect	0.002
Vinyl acetate	7.0	0.01
Vinyl chloride	0.002	0.002
Total xylenes	detect	0.002

[1] Action Level represents the most stringent of the TACO Tier 1 remediation objectives for industrial/commercial properties with Class I ground water.

[2] Reporting Limit represents the analytical laboratory reporting limit (refer to GLA's QAPP for more information).

detect - Since a TACO Tier 1 remediation objective has not been established, the reporting limit will be applied as the action level.

TABLE SEVEN: Ground Water Action Levels -TAL Metals/Ta/CN/PCBs

Fansteel, Inc

All concentrations are expressed in milligrams per liter (mg/L)

ANALYTE	ACTION LEVEL [1]	REPORTING LIMIT [2]
Aluminum	detect	0.20
Arsenic	0.05	0.050
Antimony	0.006	0.006
Barium	2	0.50
Beryllium	0.004	0.004
Cadmium	0.005	0.005
Calcium	detect	0.20
Chromium	0.1	0.010
Cobalt	1	0.050
Copper	0.65	0.050
Iron	5	0.050
Lead	0.0075	0.0075
Magnesium	detect	0.20
Manganese	0.15	0.050
Mercury	0.002	0.0020
Nickel	0.1	0.050
Aroclor 1016	detect	0.0005
Aroclor 1260	detect	0.0005
Aroclor 1221 [3]	detect	0.0005
Aroclor 1232 [3]	detect	0.0005
Aroclor 1242 [3]	detect	0.0005
Aroclor 1248 [3]	detect	0.0005
Aroclor 1254 [3]	detect	0.0005
Potassium	detect	0.20
Selenium	0.05	0.010
Silver	0.05	0.050
Sodium	detect	0.20
Tantalum	detect	0.50
Thallium	0.002	0.002
Vanadium	0.049	0.049
Zinc	5	0.50

[1] Action Level represents the most stringent of the TACO Tier 1 remediation objectives for industrial/commercial properties with Class I ground water.

[2] Reporting Limit represents the analytical laboratory reporting limit (refer to GLA's QAPP for more information).

[3] This compound is a multi-component analyte. The limits for this analyte are based on the lowest concentration at which pattern recognition can be performed.

detect - Since a TACO Tier 1 remediation objective has not been established, the reporting limit will be applied as the action level.

TABLE EIGHT: Site Investigation - Estimated Schedule of Tasks

Fansteel, Inc.
North Chicago, Illinois

Activity	Time Frame	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Site Investigation Preliminary Activities									
Reserve GeoProbe and Personnel	3 Weeks								
Order Sampling Containers	2 Weeks								
Mark Site Utilities	2 Weeks								
Site Investigation Field Activities									
Boring and Well Installation	8 Days								
Well Development	3 Days								
Creek Sampling	2 Days								
Well Sampling	1 Day								
Topographic Survey	2 Days								

TABLE EIGHT: Site Investigation - Estimated Schedule of Tasks

Fansteel, Inc.
North Chicago, Illinois

Activity	Time Frame	Duration	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 16	Week 17	Week 18
Site Investigation Laboratory Analysis																	
Laboratory Analysis	2 Weeks	5 Weeks															
Receipt of Final Lab Results																	
Preparation of Data Quality Package		4 Weeks															
Data Evaluation																	
Evaluate Results		4 Weeks															
Calculate Site-Specific Objectives		4 Weeks															
Design Extent of Contamination Investigation		4 Weeks															

TABLE EIGHT: Site Investigation - Estimated Schedule of Tasks

Fansteel, Inc.
North Chicago, Illinois

Activity	Time Frame	Duration	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26	Week 27	Week 28	Week 29	Week 30	Week 31	Week 32	Week 33	Week 34	Week 35
Extent of Contamination Preliminary Activities																			
Reserve GeoProbe and Personnel	3 Weeks																		
Order Sampling Containers	2 Weeks																		
Mark Site Utilities	2 Weeks																		
Extent of Contamination Investigation																			
Field Activities	6 Weeks																		
Receive Laboratory Analysis	5 Weeks	2 Weeks																	
Evaluate Laboratory Results		3 Weeks																	
Revise Tier 2/Tier 3 Analyses		4 Weeks																	

TABLE EIGHT: Site Investigation - Estimated Schedule of Tasks

Fansteel, Inc.
North Chicago, Illinois

Activity	Time Frame	Duration	Week 34	Week 35	Week 36	Week 37	Week 38	Week 39	Week 40	Week 41	Week 42	Week 43	Week 44	Week 45	Week 46	Week 47	Week 48
Report Preparation																	
Site Drawings, Boring Logs, etc.		4 Weeks															
Summarize Lab Results		4 Weeks															
Site Investigation Report (draft)		6 Weeks															
Site Investigation Report (final)		3 Weeks															

CARLSON ENVIRONMENTAL, INC.

ATTACHMENT C
CEI Statement of Qualifications

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CARLSON ENVIRONMENTAL, INC.

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fax: (217) 544-8814

Services & Experience

CARLSON ENVIRONMENTAL, INC.

CARLSON ENVIRONMENTAL, INC.

Section 1

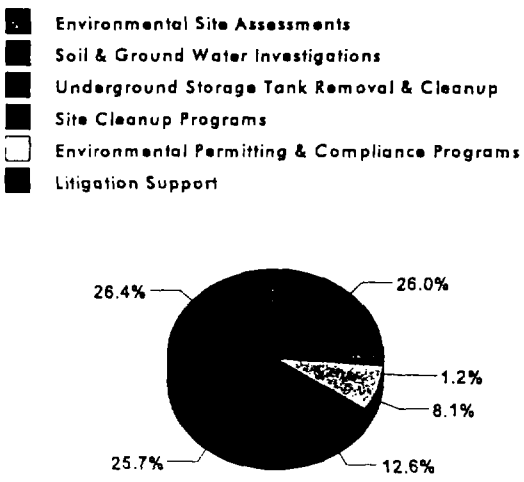
Corporate Overview

CARLSON ENVIRONMENTAL, INC.

company background

Carlson Environmental, Inc. (CEI) was founded in 1988 by Dr. Richard J. Carlson, who had previously served as Director of the Illinois Environmental Protection Agency from 1981 through 1988. Dr. Carlson continues to oversee all aspects of the firm's engineering and consulting practice. CEI has evolved into a full service engineering and consulting firm. CEI maintains its principal office on the northeastern edge of Chicago's Loop, and a satellite office near the State Capitol Building in Springfield, Illinois.

BREAKDOWN OF SERVICES



CEI offers a broad range of consulting and engineering services designed to assist clients in managing environmental liability.

integrated services

CEI's ability to integrate our services allows us to address virtually any environmental problem facing a client. From simple site assessments to complex soil and ground water remediation systems, CEI provides total project management/"one stop shopping" for all projects in each of our service areas.

client partnerships

Long term client relationships form the foundation of CEI's corporate philosophy. CEI believes in building true partnerships with clients in order to more effectively manage the environmental challenges facing companies today. With a specialized knowledge of the environmental and regulatory community, CEI works to create and implement economical solutions that bring our clients a step closer to achieving their business goals.

regulatory relationships

The ability to work effectively with state and Federal regulatory agencies is crucial to the development of successful compliance programs. CEI's experience with the related bureaucracies and their rules and regulations is extensive and well-rounded. CEI acts as a liaison between clients and the pertinent agencies, allowing us to tailor solutions that are advantageous to all parties.

benefits to clients

CEI offers clients a full array of services, from management consulting to engineering design and construction management. Our staff is large enough to provide depth of experience and expertise; yet, small enough to ensure that clients receive the full attention of the firm's principals and staff. Since its founding in 1988, there has been very little turnover in CEI's technical staff. Through CEI's combination of compact size, staff stability and varied project experience, our consulting services have come to be characterized by: responsiveness, attention to client goals, and successful problem solving.

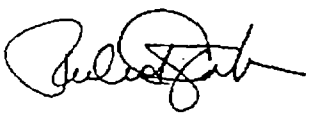
"As a firm that has succeeded because of long term client relationships and referral business, we believe in, and are committed to four basic tenets of client service. We at CEI:

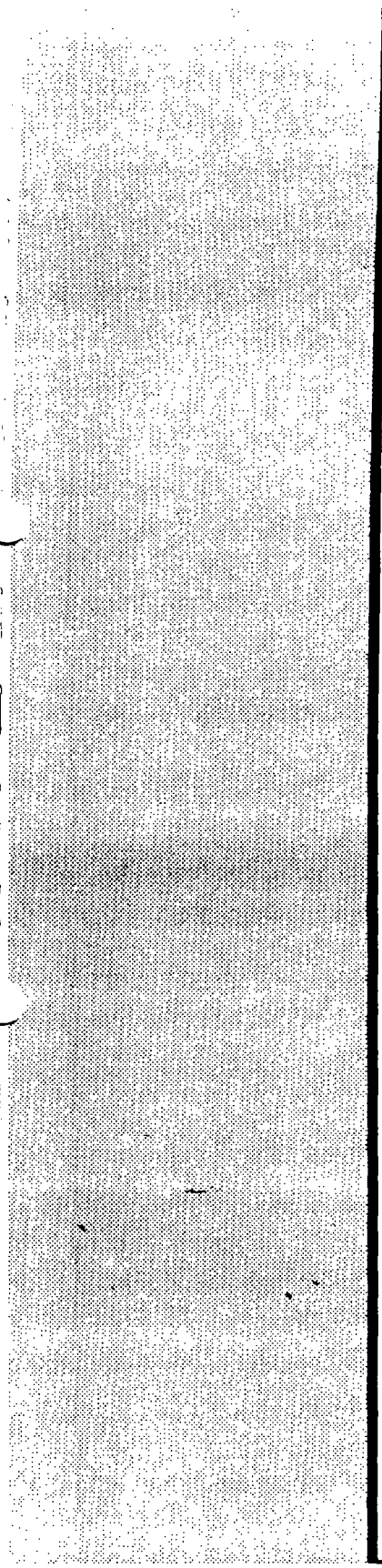
Show up on time;

Follow through on our promises ;

Finish what we start;

Say please and thank you."





about our founder...

Dr. Richard J. Carlson, President and Founder of CEI, oversees all aspects of the firm's engineering and consulting practice. With over twenty years of executive experience in government and the consulting industry, Dr. Carlson has developed a unique ability to create cost effective solutions to the problems of corporate environmental compliance.

Prior to founding CEI, Dr. Carlson served as the Director of the Illinois Environmental Protection Agency from 1981 to 1988. As the State's top environmental regulator, Dr. Carlson guided the IEPA through the development of the Illinois Superfund program, passage of the Illinois Ground Water Protection and Solid Waste Management Acts, and the implementation of the Resource Conservation and Recovery Act.

Through participation in the National Governor's Association and various committees of the United States Environmental Protection Agency (USEPA), Dr. Carlson has developed a broad knowledge of regulatory agency activities throughout the country. Prior to his position as IEPA Director, Dr. Carlson served as Special Assistant to Governor James R. Thompson for Environmental and Natural Resources.

CARLSON ENVIRONMENTAL, INC.

Environmental Assessments

Section 2

CARLSON ENVIRONMENTAL, INC.

environmental assessments

Parties involved in real estate transactions and business mergers or acquisitions should carefully evaluate property and facility conditions to determine if the property has been contaminated with hazardous substances and may require cleanup under Federal or State law. If environmental problems do exist, the cleanup cost could equal or exceed the value of the property. For real estate loans, lending institutions now typically require environmental assessments for commercial and industrial properties prior to financing in order to identify environmental liabilities that might affect the value of the collateral.

- CEI conducts Phase I site assessments to determine if past or present activities may have resulted in soil or ground water contamination, or if other environmental issues exist at the site such as asbestos or wetlands.

- CEI also conducts Phase II field testing, such as soil sampling and ground water monitoring, to determine the nature and extent of contamination and to estimate cleanup costs.

- If site remediation is required, CEI will design and implement cleanup programs.

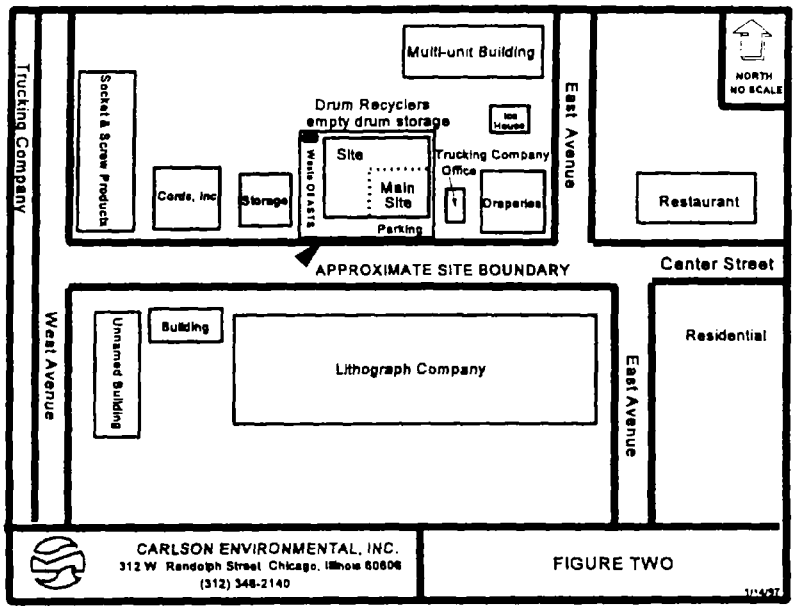
Conversion of a Manufacturing Facility to Residential Use

Chicago, Illinois
March 1995 to Present

On behalf of the developer, CEI conducted a Phase I Environmental Assessment for a site consisting of eleven buildings, two courtyards and two parking lots situated on 35 acres of land on Chicago's north side. The site had been the location of an electrical component manufacturing operation for over 60 years. In addition to the Phase I Environmental Assessment, CEI also worked on the terms of the purchase contract; provided oversight of investigation and remediation work conducted by the seller; and assisted in obtaining a Property Transfer Liability Insurance Policy to address environmental issues discovered during the development of the site. CEI will design and manage various cleanup activities agreed to be undertaken by the developer during the conversion of the site for residential use.

Multi-Site Assessment

As part of the due diligence required prior to forming one of the nation's largest real estate investment trusts, CEI performed Phase I Environmental Assessments on 32 industrial properties in the Chicago metropolitan area and Northern Indiana. CEI worked closely with the client and their attorneys to ensure that the environmental condition of each property was accurately represented to prospective shareholders.



Multiple Site Assessments, Chicago and Northern Indiana

Since that time, CEI has conducted over 50 Phase I/Phase II site investigations for properties as they are added to the Client's portfolio.

CARLSON ENVIRONMENTAL, INC.

American National Bank*
Bank One*
Bank of America*
CB Commercial
CenterPoint Properties, Inc.
Centrum Properties
Chicago Academy of Sciences
Chicago Lock Company
Citibank
Cole Taylor Bank*
Colliers, Bennett & Kahnweiler, Inc.
Comerica Bank*
Cozzi Iron & Metal
Dominick's Finer Foods
Knight Architects, Engineers & Planners
Korea First Bank
LaSalle Bank Lakeview
LaSalle National Bank*
LaSalle Northwest National Bank
Marquette National Bank*
Nationsbank*
The Levy Organization
Morgan Realty Partners
NBD Banks*
Old Kent Bank*
Paine/Wetzel Associates, Inc.
The Prime Group
Public Building Commission of Chicago

Representative Clients

Environmental Assessments

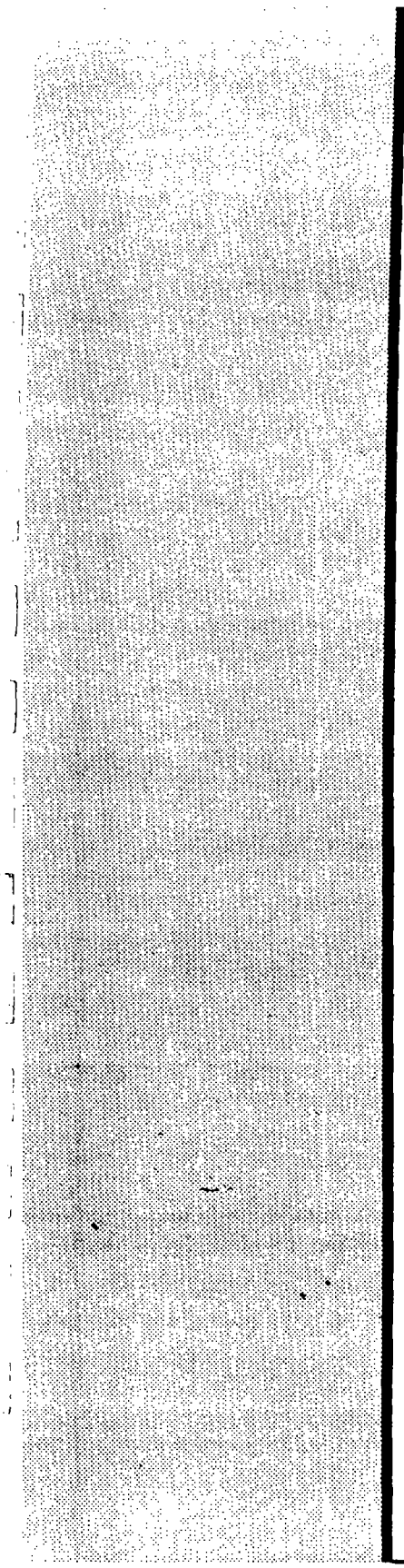
Eagle Foods Incorporated
Earl Scheib, Inc.
Fidelity Mutual Life Insurance Co.
First Midwest Bank*
First National Bank of Chicago
First National Bank of Illinois
Foster Bank
Glass Specialty Companies
Hannah Marine Corp.
Harris Bank & Trust
Illinois Housing Development Authority
Illinois International Port District
Johnstown America
Kendal Container Company
Pullman Bank
Reed Chatwood, Inc.
The RREEF Funds
Rubloff Development Group, Inc.
SIPI Metals
TCF Bank*
Tony Perry & Associates
United Parcel Service
Union National Bank of Elgin
Uno-Ven Products
Village of Oak Park
Village of Riverdale
Walsh Higgins & Co.
Wisconsin Tool & Stamping Co.

*CEI is an approved environmental consultant at this financial institution

CARLSON ENVIRONMENTAL, INC.

Section 3

Soil and Ground Water Investigations



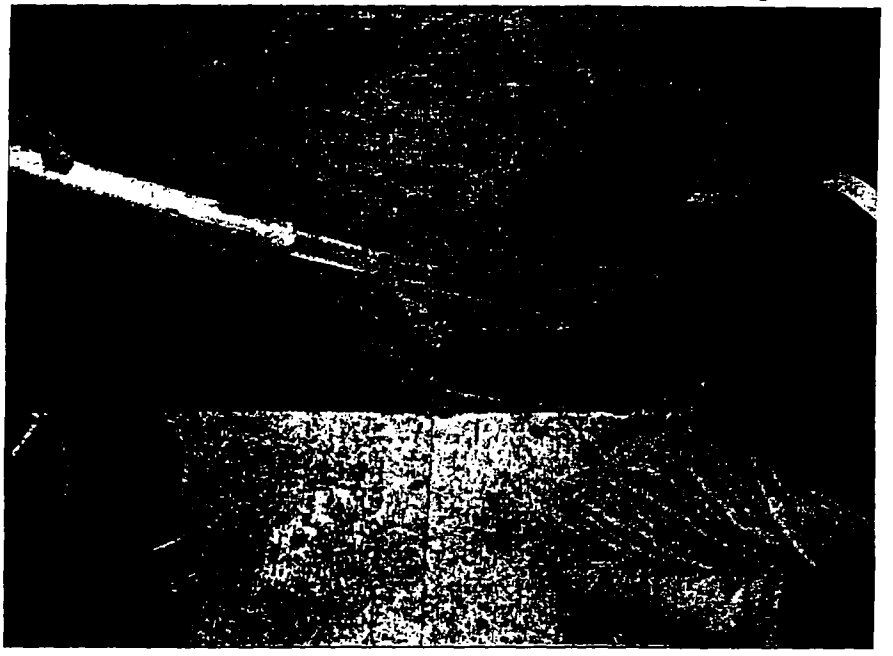
soil and ground water investigations

Chemical releases from past and current facility operations can have significant impacts on soils and ground water systems. The migration of these impacts requires knowledge of applicable regulations as well as the practical "know how" to define the extent of contamination and to design cost effective cleanup remedies. CEI conducts soil and sediment sampling; implements ground water monitoring programs; designs and constructs remediation systems; and provides comprehensive project management services.

Sediment Sampling for a Dredging Program

Since 1988, CEI has provided technical support for an ongoing program of dredging in Lake Calumet. This has included periodic sampling of the lake bed to support a State water quality certification under the Army Corps of Engineers permitting program. The sampling program typically includes sampling of the sediment layer and the underlying clay matrix and analyses for chemical and geotechnical parameters.

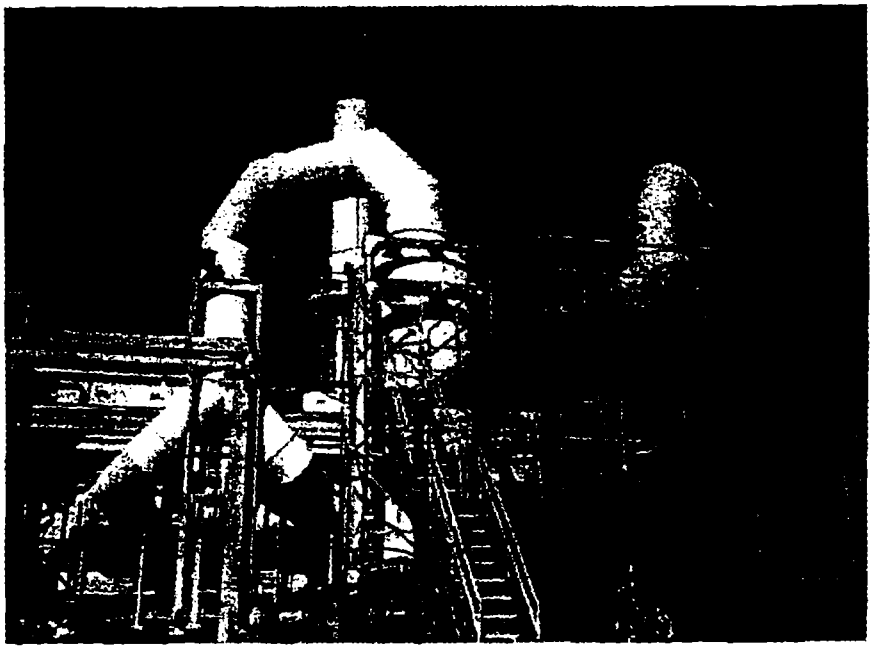
Lake Calumet - Chicago, Illinois



To conduct this type of sampling, CEI staff fabricated a unique hollow core hand sampling sediment device. Sampling work plans receive prior approval by IEPA and USEPA. Virtually all of the clay material dredged from Lake Calumet has been benefically reused for landfill capping and related environmental construction in the area. Approximately 500,000 cubic yards have been used to cap an abandoned municipal landfill at the north end of Lake Calumet, which was subsequently developed into the Harborside International Golf Complex.

RCRA Facility Investigation (Phase I, II, III)
Chicago, Illinois

The subject site is located on a 27-acre pier extending 2,500 feet out into Lake Calumet on Chicago's southeast side. The site operates as an industrial waste treatment and handling facility under a RCRA Part B permit. Provisions of the permit require the operator to conduct a facility investigation to determine if "corrective action" is required to manage waste or product releases into the environment. Since January of 1995, CEI has been conducting a comprehensive investigation of soil and ground water conditions under IEPA-approved work plans. To date, over 500 soil samples have been collected and analyzed in a multi-phase investigation to define the nature and extent of contamination at the facility.



CARLSON ENVIRONMENTAL, INC.

Bank One
CenterPoint Properties, Inc.
Centrum Properties
Chicago Academy of Sciences
Clean Harbors
Coach & Car Equipment Corp.
Cole Taylor Bank
Colliers Bennett & Kahnweiler, Inc.
Comerica Bank
Cozzi Iron & Metal
Dominick's Finer Foods
Harris Bank & Trust
Illinois Housing Development Authority
Illinois International Port District
Knight Architects, Engineers & Planners
LaSalle National Bank
The Levy Organization
Libbey-Owens-Ford
Loctite Corporation
Morgan Realty Partners
Production Tool
Public Building Commission of Chicago

Soil and Ground Water Investigations

Representative Clients

Eagle Foods Incorporated
Escast, Inc.
Fansteel, Inc.
Fidelity Mutual Life Insurance Co.
First National Bank of Chicago
Foster Bank
Freuhauf Trucking
General Motors Acceptance Corp.
GLS Corporation
Glass Specialty Companies
Reed Chatwood, Inc.
The RREEF Funds
Robertson Ceco Corp.
Rubloff Development Group, Inc.
The Mirage
Soft Sheen Products, Inc.
United Parcel Service
Village of Riverdale
Walsh Higgins & Co.
Wesley-Jessen Corporation

CARLSON ENVIRONMENTAL, INC.

Section 4

Underground Storage Tank Removal & Cleanup

underground storage tanks

Federal and State regulations impose strict upgrading requirements on existing tank systems as well as design and operating standards for new tanks. Moreover, tanks no longer in use or leaking generally must be removed from the ground or abandoned in place. Contaminated soils or ground water must be cleaned up to acceptable levels.

- CEI conducts site investigations to determine if leaks have occurred; designs remediation programs for contaminated soil and/or ground water; oversees tank removals; and prepares State reimbursement applications.

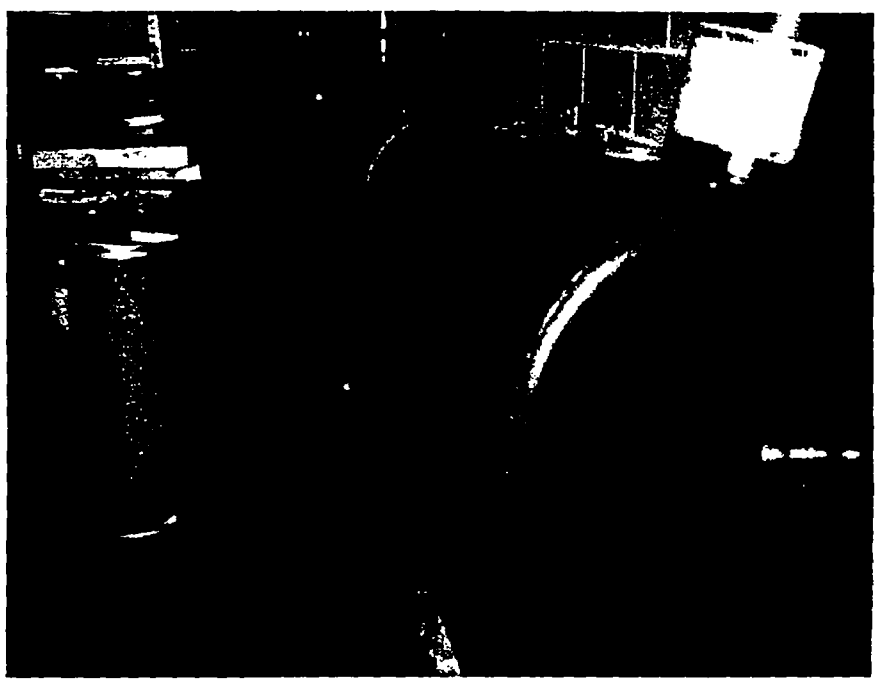
- CEI also assists clients in obtaining "closure" letters from State regulatory agencies certifying that no additional cleanup is required at a site. This typically allows buyers and lenders to close transactions knowing that there is no substantial threat of further cleanup demands by the government.

UST Investigation, Removal and Closure
Chicago and Evanston, Illinois
1990 to 1999

In 1990, CEI began investigations for the presence of USTs at nine branch bank sites in and around Chicago. USTs were discovered at six of the locations. CEI provided oversight for the removal of tanks and contaminated soils at three sites. Formal closure letters have been obtained from the IEPA for each of these sites. The three remaining sites are scheduled for closure in 1999.

UST Investigations at 25 Sites
Skokie, Prospect Heights and Wheeling , Illinois
February 1996

At the request of the Client, CEI conducted regulatory database reviews and site inspections at 25 commercial property locations to determine if USTs were present, or if other site activities could result in waste or product releases to the environment. Initial site inspections were followed by soil sampling at selected sites to evaluate the nature and extent of suspected contamination.



CARLSON ENVIRONMENTAL, INC.

Aeropres, Inc.
Beatrice Company
Browning-Ferris Industries
Carol Stream Ice Arena
CB Commercial
CenterPoint Properties, Inc.
Centrum Properties
Chicago Academy of Sciences
Chicago Lock Company
Citibank
City Insulation Company
Cole Taylor Bank
Colliers, Bennett & Kahnweiler, Inc.
Comerica Bank
General Motors Acceptance Corp.
Glass Specialty Companies
Griffith Laboratories
Hallmark Mailing Services, Inc.
Harris Bank & Trust
Hillcrest Healthcare Center, Inc.
HSA, Inc.
IEI Barge, Inc.
Illinois Federal Savings and Loan
Kendal Container Company
Korea First Bank
Lake Shore Athletic Club
LaSalle National Bank
Loctite Corporation

Underground Storage Tank Removal & Cleanup

Representative Clients

Corn Products
Cozzi Iron & Metal
Crescent Electric
Donahue's Truck Plaza
Downers Grove Ice Arena
Earl Scheib, Inc.
Enterprise Rent-A-Car
Fansteel, Inc.
FCL/Stava
Fidelity Mutual Life Insurance
Fields Saab, Inc.
Finishing Plus, Inc.
First National Bank of Chicago
Foster Bank
Freuhauf Trucking
Louis A. Weiss Memorial Hospital
Marquette National Bank
Mancuso Cheese Company
Morgan Realty Partners
NBD Banks
Northern Builders/Rogers Leasing
Peacock Oil Company
Remin/Karta-A-Bag
RN Realty
The RREEF Funds
Soft Sheen Products
Tirapelli Ford, Inc.
Tommy Armour Golf
Village of Oak Park
Village of Riverdale

CARLSON ENVIRONMENTAL, INC.

Section 5

Site Cleanup Programs

site cleanup programs

Facilities regulated under various Federal and State programs (e.g. RCRA, CERCLA) may be required to cleanup contamination created by current or historical waste management practices. These cleanup programs typically involve soil and/or ground water remediation. Property owners, as well, may be compelled to address environmental issues to satisfy buyers or financial institutions.

- ❑ CEI has extensive experience in managing a wide variety of cleanups involving contaminated soil and ground water, as well as asbestos and lead paint abatement.

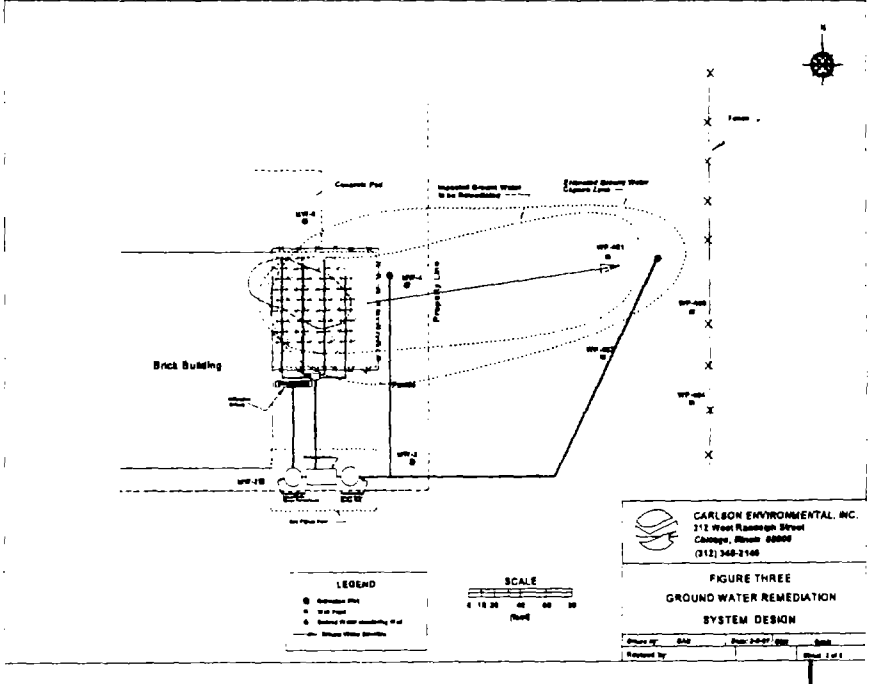
- ❑ CEI offers clients total project management capabilities from conceptual design to the procurement of closure letters from State regulatory agencies.

- ❑ CEI will define or confirm the extent of contamination through sampling programs and building inspections; prepare risk assessments; prepare bid specifications; and manage or coordinate remediation, abatement or decontamination services.

Soil Vapor Extraction/Ground Water Pump and Treat

Degreasing operations and drum storage of waste solvents over a period of years resulted in releases of chlorinated solvents into soil and ground water at this four-acre industrial site occupied by a 33,000 square foot building. A pilot test conducted by CEI in 1995 demonstrated that soil venting, in conjunction with ground water pumping and treatment methods will effectively remove solvents in the soil and ground water at the site. A work plan for implementing a full scale system was submitted to, and approved by the IEPA.

Mundelein, Illinois



Automobile Dealership
Chicago, Illinois

July 1994

In preparation for the sale and redevelopment of the site, a former automobile dealership, CEI removed two underground storage tanks; excavated and disposed of a small quantity of contaminated soils; removed all hydraulic lifts and associated piping; steam-cleaned sewers and catch basins underneath the site building; and removed all asbestos-containing building materials. The site was subsequently sold and redeveloped into a branch banking facility.

CARLSON ENVIRONMENTAL, INC.

Environmental Permitting & Compliance Programs

Section 6

CARLSON ENVIRONMENTAL, INC.

environmental permitting & compliance programs

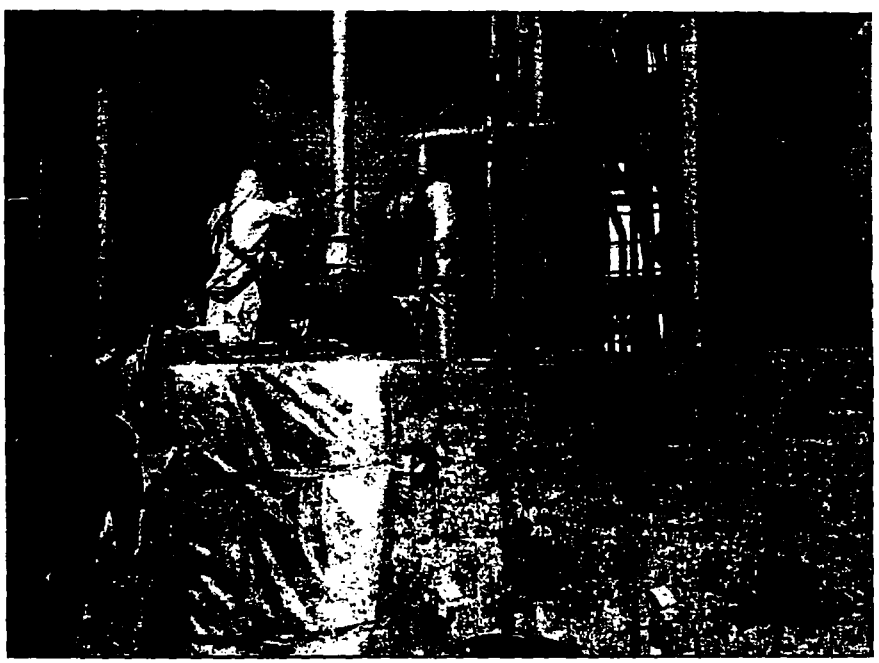
Companies that are developing or expanding manufacturing operations often require assistance in obtaining permits from regulatory agencies. In addition, changes in Federal and State laws frequently subject existing facilities to new permitting requirements.

CEI provides assistance to industry in meeting permit requirements for air, water, hazardous and solid waste. CEI staff develops the technical data necessary to complete permit applications; meets with regulatory agency staff to negotiate specific permit conditions; and designs control and compliance systems to satisfy permit requirements.

To address concerns about compliance enforcement, CEI will conduct liability assessments and facility and process evaluations to identify issues and develop compliance strategies.

Air Pollution Modeling for Contingency Planning
Chicago, Illinois
1994 to 1995

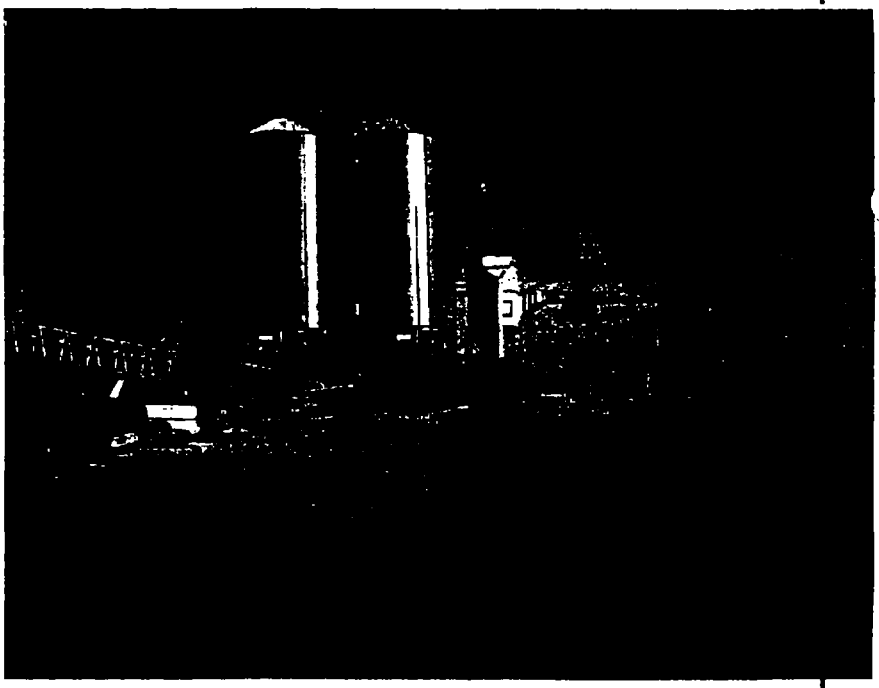
The Client operates an industrial waste treatment, storage and handling facility. The facility's RCRA permit requires documentation of emergency response procedures, including the computer modeling of potential air pollution hazards that may result from a release, fire or explosion. CEI was retained to conduct the modeling utilized in evaluating the effects of these "worst case" scenarios.



CEI used this model to develop an assessment of the possible hazards that may result from a release, fire, or explosion. This required an estimation of the quantities and types of gases that could be generated. The modeling also assessed the effects of wind speed, atmospheric stability class, and atmospheric temperature on ambient air quality levels.

Compliance Program
June 1995 to February 1996

CEI performed an environmental audit and compliance review of two grain handling facilities located on or near the Mississippi River. The project included a walk through inspection and document review at the facilities. CEI formulated a detailed schedule of those actions needed to bring the facilities into compliance. This schedule included the preparation of 1994 and 1995 air emissions reports; a general housekeeping checklist; preparation and submission of a permit to the Illinois Department of Agriculture (IDOA) to handle and store dry bulk fertilizers; and preparation of Federally Enforceable State Operating Permits (FESOPs) to address air pollution.



Grain Handling Facilities - Sauget & East St. Louis, Illinois

CARLSON ENVIRONMENTAL, INC.

Section 7

Litigation Support

litigation support

Attorneys involved in environmental and toxic torts litigation often need scientific and technical support in developing effective litigation strategies. Such assistance involves a wide variety of scientific disciplines as well as a sophisticated knowledge of how regulatory agencies work.

- ❑ CEI staff can assist counsel in developing strategies to maximize the amount of information revealed during discovery; screen, review and organize documents.

- ❑ CEI will develop effective presentations of scientific and technical data, and provide "insider" understanding of the operation of Federal and State environmental agencies.

- ❑ CEI staff can also provide expert witness testimony in judicial and administrative hearings. Individual staff experience is outlined on the following pages.

Richard J. Carlson

Jiffy Lube International v. The Southland Corporation (91 L 11220)

The Pulaski Venture v. Westinghouse Electric Corporation (91 C 3490)

Fansteel, Inc. v. Estronics et. al. (90 MR 355)

Mod-Tek, Inc. v. Lincoln Publishing (89 L 193)

Peter Engelland v. Clean Harbors, Inc. (94 L 11385)

Al Piemonte Dodge, Inc. v. Chrysler Motors Corporation (94 L 15469)

Alfred J. Paoletti v. Karr Cleaners, Inc. et. al. (94 L 0599)

Truck Components, Inc. and Brillion Iron Works, Inc. v. Beatrice Company, Hunt-Wesson et. al. (94 C 3228)

In re: Energy Cooperative, Inc. (81 B 5811)

People of the State of Illinois v. Arnold Enterprises (93 CH 1345)

Dayton Hudson v. Cardinal Industries, et al.

Edward E. Garske

Prentiss Properties Acquisition Partners v. Theodore Ignasiak, et al. (93-C-1368)

Chicago Transparent Products , Inc. v. American National Bank and Trust Company, as Trustee under Trust Nos. 25628 and 25629 (90 CH 9069)

Nicholas J. Murlas Living Trust, et al. v. Mobil Oil Corp., et al. (93 C 6956)

LaSalle National Bank v. American Hydraulics, Inc. and MNP Corporation (89 C 3532)

Kenneth W. James

Jiffy Lube International v. The Southland Corporation (91 L 11220)

Alfred J. Paoletti v. Karr Cleaners, Inc. et. al. (94 L 0599)

People of the State of Illinois v. Challenger Manufacturing, Inc. (96 CH3238)

Mankoff, Inc. v. HSA, Inc. (94 CH 1737)

Village of Rosemont v. Peacock Oil

CARLSON ENVIRONMENTAL, INC.

Thomas J. Swabowski
Bischoff Maurides & Swabowski, Ltd.
(312) 427-2600

Daniel Jarlenski
McGrath, North, Mullin & Kratz, P.C.
(402) 341-3070

Clifton A. Lake
McBride, Baker & Coles
(312) 715-5765

Jay A. Steinberg
Hopkins & Sutter
(312) 558-5186

Nicholas J. Parolisi, Jr.
Bullaro, Carton & Stone
(312) 831-1000

Joseph Wright
McBride, Baker & Coles
(312) 715-5700

Peter Zamis
Rathje, Woodward, Dyer & Burt
(630) 668-8500

Daniel J. Biederman
Hinshaw & Culbertson
(312) 704-3071

Eugene J. Frett
Sperling, Slater & Spitz
(312) 641-3200

Litigation Support

Representative Clients

CARLSON ENVIRONMENTAL, INC.

Insurance Coverage

Section 8

ACORD CERTIFICATE OF LIABILITY INSURANCE

CSR CG CARLS-1 | DATE (MM/DD/YY) 03/08/99

PRODUCER

Schwartz Brothers Insurance
35 S. LaSalle St., Suite 2035
Chicago IL 60603-4471

Joseph J. Schwartz, CPCU
Phone No. 312-630-0800 Fax No.

INSURED

Carlson Environmental, Inc.
Mr. Richard J. Carlson
312 West Randolph Street
Chicago IL 60606

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY A	Reliance Nat'l Indemnity Co.
COMPANY B	Reliance Insurance Co of Calif
COMPANY C	American Motorists Insurance
COMPANY D	Reliance National Ins. Co.

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	GENERAL LIABILITY				GENERAL AGGREGATE	$ 3,000,000
	[X] COMMERCIAL GENERAL LIABILITY	NGB251016804	12/05/98	12/05/99	PRODUCTS - COMP/OP AGG	$ 3,000,000
	[ ] CLAIMS MADE [X] OCCUR				PERSONAL & ADV INJURY	$ 1,000,000
	OWNER'S & CONTRACTOR'S PROT				EACH OCCURRENCE	$ 1,000,000
	[X] Addl Insd				FIRE DAMAGE (Any one fire)	$ 50,000
					MED EXP (Any one person)	$ 5,000
	AUTOMOBILE LIABILITY					
	[X] ANY AUTO	F3R01603300	10/21/98	10/21/99	COMBINED SINGLE LIMIT	$ 1,000,000
	[ ] ALL OWNED AUTOS				BODILY INJURY (Per person)	$
	[ ] SCHEDULED AUTOS					
	[ ] HIRED AUTOS				BODILY INJURY (Per accident)	$
	[ ] NON-OWNED AUTOS					
	[ ]				PROPERTY DAMAGE	$
	GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
	[ ] ANY AUTO	NOT PROVIDED			OTHER THAN AUTO ONLY:	
	[ ]				EACH ACCIDENT	$
					AGGREGATE	$
	EXCESS LIABILITY				EACH OCCURRENCE	$ 5,000,000
A	[X] UMBRELLA FORM	NUA163354101	12/05/98	12/05/99	AGGREGATE	$ 5,000,000
	[ ] OTHER THAN UMBRELLA FORM				Retention	$ 10,000
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				[X] WC STATU-TORY LIMITS [ ] OTH-ER	
					EL EACH ACCIDENT	$ 1,000,000
C	THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE: [X] INCL [ ] EXCL	3BG05756200	02/01/99	02/01/00	EL DISEASE - POLICY LIMIT	$ 1,000,000
					EL DISEASE - EA EMPLOYEE	$ 1,000,000
	OTHER					
B	Consultants Environmental Liab	NTF163449203 CLAIMS MADE COVERAGE	12/05/98	12/05/99	Per Claim Aggregate	$5,000,000 $5,000,000

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

Consultants Environmental Liability Coverage Continued: $50,000 Self-Insured Retention, Claims Made Coverage, Retro Date 5/5/92. Refer to attached Addendum for additional information.

CERTIFICATE HOLDER

INFOR-1

For Insurance Verification Purposes Only

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

Joseph J. Schwartz, CPCU

CARLSON ENVIRONMENTAL, INC.

Management Profiles

Section 9

CARLSON ENVIRONMENTAL, INC.

Richard J. Carlson

President

- Represents clients in negotiating permits, compliance orders and consent decrees with Federal and State regulatory agencies.
- Manages environmental compliance audits and assists with the development of compliance management systems.
- Manages environmental assessments of a wide variety of commercial and industrial facilities for real estate transactions, mergers, and acquisitions.
- Provides expert testimony in support of various environmental litigation matters on behalf of clients.

education

Doctor of Philosophy, Public Administration, University of Illinois

Master of Science, Communications, University of Illinois

Bachelor of Science, Communications, University of Illinois

selected professional activities

- Co-chair, Environmental Control Committee, Chicagoland Chamber of Commerce, 1988-1993.
- Staff Chair, Task Force on Global Climate Change, National Governors' Association, 1989-1990.
- Director, Illinois Asbestos Abatement Authority, 1988.
- Commissioner, Ohio River Valley Water Sanitation Commission, 1981-1988.
- Member, Water Quality Board, International Joint Commission, 1985-1988.
- Chair, Great Lakes Environmental Administrators, 1987-1988.

CARLSON ENVIRONMENTAL, INC.

Edward E. Garske

Vice President of Operations

- Manages all field operations.
- Directs business management programs and related staff.
- Supervises all project-related activities and project management.

Project Manager

- Supervises underground storage tank removals, including the remediation of contaminated soils and ground water.
- Has conducted over 600 environmental site assessments.
- Provides oversight for a wide range of remedial action projects.

Has managed projects involving building inspections to identify and sample asbestos-containing building materials (ACBM), quantify ACBM, prepare bid documents, assist in contractor selection and oversee project management.

education

Bachelor of Science, Water Chemistry, University of Wisconsin

registrations / certifications

40-Hour OSHA 29CFR1910.120 HAZWOPER

AHERA Asbestos Building Inspector & IDPH Licensed

Certified Hazardous Materials Manager (CHMM) - Master Level

CPR and First Aid Training

CARLSON ENVIRONMENTAL, INC.

Kenneth W. James

Director of Engineering

Oversees all engineering operations, including underground storage tank investigations, removals, and remediation measures.

Project Manager/Engineer

- Manages underground storage tank investigations, tank removals and remediation of petroleum contaminated soils and ground water.
- Manages leaking underground storage tank (LUST) Site Classifications and prepares associated Illinois Environmental Protection Agency (IEPA) documentation.
- Designs and implements soil sampling and ground water monitoring programs.
- Manages the preparation of documentation required by the IEPA for the reimbursement of funds spent to remediate LUST sites.
- Provides professional engineering oversight for TSCA decontamination activities, RCRA Remedial Facility Investigations and RCRA closures.
- Prepares operating permits for the Clean Air Act Permit Program.

education

Master of Business Administration, The University of Chicago

Bachelor of Science, Chemical Engineering, Illinois Institute of Technology

registrations / certifications

Registered Professional Engineer, Illinois, Indiana, Ohio and Wisconsin

40-Hour OSHA 29CFR1910.120 HAZWOPER

Asbestos Contractor Supervisor (OSHA Competent Person) & IDPH Licensed

CPR and First Aid Training

CARLSON ENVIRONMENTAL, INC.

Valerie A. Baxa

Manager of Business Development/Project Manager

- Directs all business development activities.
- Creates and implements client management programs.
- Manages asbestos abatement projects and RCRA closures and corrective actions.
- Has conducted over 200 environmental assessments for real estate transactions.
- Manages the preparation of environmental permit applications.
- Performs Phase II Environmental Assessment soil and ground water sampling activities.

education

Master of Environmental Management, Illinois Institute of Technology

Bachelor of Science, Loyola University of Chicago

registrations/certifications

Certified Hazardous Materials Manager (CHMM)

40-Hour OSHA 29CFR1910.120 HAZWOPER

8-Hour OSHA 29CFR1910.120(E) Site Supervisor

AHERA Asbestos Building Inspector & IDPH Licensed

CPR and First Aid Training

CARLSON ENVIRONMENTAL, INC.

Margaret M. Karolyi

Manager of Field Investigations/Project Manager

- Designs and supervises soil and ground water investigations.
- Manages projects for sites participating in State or Federal programs including RCRA, leaking underground storage tanks (LUSTs) and voluntary cleanups.
- Conducts risk-based analyses to determine remediation strategies and develop site-specific cleanup objectives (e.g. TACO and RBCA).
- Provides technical assistance to the design and implementation of remediation systems and corrective action activities.
- Prepares permit applications for waste water and storm water discharges and air pollution control applications.

education

Master of Science, Environmental Engineering, Illinois Institute of Technology

Bachelor of Science, Chemical Engineering, Michigan State University

registrations/certifications

Registered Professional Engineer, Illinois

40-Hour OSHA 29CFR1910.120 HAZWOPER

8-Hour OSHA 29CFR1910.120(E) Site Supervisor

AHERA Asbestos Building Inspector & IDPH Licensed

CPR and First Aid Training

CARLSON ENVIRONMENTAL, INC.

Bruce A. Shabino

Manager of Remedial Actions/Project Manager

- Manages, designs and implements remediation strategies for a variety of projects.
- Oversees soil and ground water sampling and monitoring programs.
- Performs site classifications for leaking underground storage tank (LUST) sites and prepares associated IEPA documentation.
- Conducts hydrogeological investigations
- Manages underground storage tank (UST) removals and remediation.
- Conducts Phase II investigations.

education

Master of Science, Geology, University of Illinois-Chicago

Bachelor of Science, Environmental Health Science, Illinois State University

registrations/certifications

Certified Professional Geologist

40-Hour OSHA 29CFR1910.120 HAZWOPER

8-Hour OSHA 29CFR1910.120(E) Site Supervisor

AHERA Asbestos Building Inspector & IDPH Licensed

Asbestos Contractor Supervisor (OSHA Competent Person) & IDPH Licensed

Licensed Air Sampling Professional

CPR and First Aid Training

CARLSON ENVIRONMENTAL, INC.

Lisa P. Meagher

Project Manager

- Conducts Phase I Environmental Assessments.
- Performs Phase II soil and ground water investigations.
- Performs site classifications for leaking underground storage tank (LUST) sites and prepares associated IEPA documentation.
- Conducts hydrogeological investigations and extent of contamination studies.
- Manages underground storage tank (UST) removals and remediation.

education

Master of Environmental Management, Illinois Institute of Technology*

Bachelor of Science, Geology, Northern Illinois University

registrations/certifications

Certified Professional Geologist

40-Hour OSHA 29CFR1910.120 HAZWOPER

8-Hour OSHA 29CFR1910.120(E) Site Supervisor

AHERA Asbestos Building Inspector

CPR and First Aid Training

CARLSON ENVIRONMENTAL, INC.

Elizabeth A. Seltzer

Site Assessment Manager/Project Manager

- Oversees the Phase I Environmental Assessment Program.
- Coordinates technical and historical information for Phase I reports.
- Conducts Phase I Environmental Assessments and building inspections for asbestos-containing building materials.
- Manages the preparation of environmental permit applications.
- Performs Phase II Environmental Assessment soil and ground water sampling activities.

education

Bachelor of Science, Environmental Biology, Eastern Illinois University

registrations/certifications

40-Hour OSHA 29CFR1910.120 HAZWOPER

8-Hour OSHA 29CFR1910.120(E) Site Supervisor

AHERA Asbestos Building Inspector & IDPH Licensed

CPR and First Aid Training

ATTACHMENT A

INDEX TO ADMINISTRATIVE RECORD

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMEDIAL ACTION

ADMINISTRATIVE RECORD
FOR
VULCAN LOUISVILLE SMELTING COMPANY SITE
(A.K.A. VACANT LOT SITE)
NORTH CHICAGO, ILLINOIS

ORIGINAL
JULY 12, 1997

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	00/00/00	IEPA		CERCLA Screening Site Inspection Analytical Results (CONFIDENTIAL MATERIAL MAY BE ENCLOSED)	155
2	00/00/00	U.S. EPA	File	Tables: Summaries of (1) Groundwater Sampling Results; (2) On-Site Soil Sampling Results; (3) Off-Site Soil Sampling Results for the Vacant Lot Site	3
3	06/30/75	McDonald, J., U.S. EPA	Lavin, N., North Chicago Refiners and Smelters, Inc.	Letter Forwarding Attached NPDES Permit, No. IL 0002755 w/Permit Application and Correspondence	45
4	07/07/88	Krebs, L., National Environmental Testing, Inc.	Doubet, S., IEPA	Letter Forwarding Attached Final Report Submission for the North Chicago Ground Fire Project	14
5	10/09/88	MAECORP, Inc.	Northern Trust Co.	Report: Water Sampling Results from the 22nd Street Property	20
6	02/10/89	Laukant, R., MAECORP, Inc.	Magel, B., Karaganis & White, Ltd.	Letter Forwarding Attached Interim Report for Stack Property	37
7	03/27/89	MAECORP, Inc.	Karaganis & White, Ltd.	Final Report for Sampling and Analytical Investigation at the Stack Property	44

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
8	11/13/89	MAECORP, Inc.	Karaganis & White, Ltd.	Revised Final Report and Analytical Investigations at the Stack Property	41
9	12/12/90	Lesko, K., U.S. EPA	IEPA/Cleanup Objective Team	Memorandum Re: RCRA Closure Log for Fansteel, Inc.	62
10	02/00/91	Envirodyne Engineers, Inc.	Lake County Division of Transportation	Phase I Report: Environmental Site Assessment for the North Chicago Bike Path	125
11	06/07/91	Envirodyne Engineers, Inc.	Lake County Division of Transportation	Phase II Report: Environmental Assessment for the North Chicago Bike Path	42
12	06/00/92	Aires Environmental Services, Ltd.	Tenney Pavoni Associates, Inc.	Report: Soil Sampling Survey at the Proposed Bike Path in North Chicago	17
13	12/00/93	U.S. EPA / Office of Water	U.S. EPA	Drinking Water Regulations and Health Advisories	13
14	04/25/94	McSwiggin, T., IEPA	Fansteel, Inc.	Letter Re: Notice of Coverage Under the Non-Contact Cooling Water General Permit w/ Attached Permit, Correspondence, and Illinois Pollution Control Board Order and Opinion Documents	92
15	06/00/94	Geraghty & Miller, Inc.	The Northern Trust Co., U.S. EPA	Report: Groundwater Investigation at the Stack Property	94
16	07/11/94	Smith, R., U.S. EPA	RBC Table Mailing List	Risk-Based Concentration Table: Third Quarter 1994	20
17	09/06/94	Triller, J., IEPA	Bruce D., U.S. EPA	Memorandum Re: Groundwater and Sediment Sample Survey at the Vacant Lot Site	5

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
18	12/15/94	Gillig, R., USDHHS/USPHS/ ATSDR	Fabinski, L., USDHHS/U.S. EPA Region 5	Memorandum Re: Health Consultation for the Vacant Lot Site	16
19	02/09/95	Smith, R., U.S. EPA	U.S. EPA	U.S. EPA Region 3 Risk-Based Concentration Table: Background Information	21
20	02/24/95	Ecology & Environment, Inc.	U.S. EPA/ EERB	Site Assessment Report for North Chicago Site	52
21	03/07/95	Smith, R., U.S. EPA	RBC Table Mailing List	Risk-Based Concentration Table: January-June 1995	3
22	03/23/95	Riley, J., U.S. EPA	U.S. EPA	Memorandum Re: Update #2 to Removal Action Levels with Draft Soil Screening Level Guidance	25
23	05/00/95	U.S. EPA/ Office of Water	U.S. EPA	Drinking Water Regulations and Health Advisories	15
24	03/12/96	Burris, B., Ciorba Group, Inc.	Graey, J., U.S. EPA (O'Grady, J.)	Excerpts from the Following Reports: (1) Phase II Environmental Assessment; (2) IEPA Onsite & Offsite Soil Sample Information; (3) American Environmental Analytical Lab Report for 6 Locations; (4) CBC Composite Soil Sample for Pettibone Creek	37
25	07/25/96	O'Grady, J., U.S. EPA	File	Groundwater Sampling Data (ANNOTATED)	4
26	08/01/96	O'Grady, J., U.S. EPA	Nabasny, G., U.S. EPA	Action Memorandum: Funding for Engineering Evaluation/Cost Analysis for the Vacant Lot Site w/Attachments	21
27	10/20/96	Smith, R., U.S. EPA/ Region 3	RBC Table Mailing List	Risk-Based Concentration Table: July-December 1995	30

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
28	11/13/96	O'Grady, J., U.S. EPA	Triller, J., IEPA	Letter Re: Brief Update of Activities Undertaken by U.S. EPA in Regards to the Vulcan Louisville Smelting Site, Including a Request for Additional Information Necessary to Complete Site Studies	1
29	11/27/96	Triller, J., IEPA	O'Grady, J., U.S. EPA	Memorandum Re: NPDES Permits for Fansteel and R. Lavin & Sons	2
30	12/10/96	Triller, J., IEPA	O'Grady, J., U.S. EPA	Information Concerning RCRA Closure at the Fansteel Site w/ Sampling Data	41
31	12/11/96	Crause, T., et al; IEPA	O'Grady, J., U.S. EPA	Letter Re: Inclusion of Fansteel, Inc. in the EE/CA Being Performed for the Vacant Lot Site	1
32	4/10/97	Pullen, L., U.S. EPA	O'Grady, J., U.S. EPA	Memorandum Re: Vacant Lot Site: Determination of a Clean-Up Goal for Lead	8
33	05/00/97	U.S. EPA	File	Aerial Photographic Analysis: Vacant Lot Site-North Chicago, IL	32
34	05/00/97	U.S. EPA	Public	Superfund Fact Sheet: Vacant Lot Site	4
35	05/00/97	Nagam, Raghu Ecology & Environment, Inc.	O'Grady, J., U.S. EPA	Memorandum Re: Update on First Sampling Event Conducted at Vacant Lot Site	5
			UPDATE #1 **OCTOBER 30, 1997**		
1	10/30/97	Ecology and Environment, Inc.	U.S. EPA	Engineering Evaluation/ Cost Analysis for the Vacant Lot Site	597
			UPDATE #2 **MARCH 24, 1998**		
1	06/17/97	U.S. EPA	Jarosz, W., Fansteel, Inc.	General Notice of Potential Liability re: the Vulcan Louisville Smelting Company Site	6

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
2	09/22/97	O'Grady, J., U.S. EPA	Triller, J., IEPA	Letter Providing Draft EE/CA for the Vacant Lot Site to IEPA for Comment	1
3	09/26/97	Triller, J., IEPA	O'Grady, J., U.S. EPA	Letter re: Comments from IEPA to U.S. EPA on the Draft EE/CA for the Vacant Lot Site	1
4	10/29/97	O'Grady, J., U.S. EPA	Triller, J., IEPA	Letter re: U.S. EPA's Response to IEPA's Comments on the Draft EE/CA for the Vacant Lot Site	3
5	11/00/97	U.S. EPA	Public	Fact Sheet for the Vacant Lot Site	8
6	11/04/97	O'Grady, J., U.S. EPA	Vickery, R.; Freeborn & Peters	Transmittal Letter Accompanying Final EE/CA for the Vacant Lot Site	1
7	11/04/97	O'Grady, J., U.S. EPA	Bakowski, E. and T. Crause; IEPA	Transmittal Letter Accompanying Final EE/CA for the Vacant Lot Site	1
8	11/04/97	O'Grady, J., U.S. EPA	Lake, C.; McBride, Baker & Coles	Transmittal Letter Accompanying Final EE/CA for the Vacant Lot Site	1
9	11/06/97	Lake, C.; McBride, Baker & Coles	O'Grady, J., U.S. EPA	Letter Acknowledging Receipt of Final EE/CA and Submittal of Fansteel EE/CA by December 8, 1997	1
10	11/12/97	Gaiser, V., Independent Court Reporters	U.S. EPA	Transcript of November 12, 1997 Public Meeting re: the Vacant Lot Site	33
11	11/24/97	Royal, F., Lake County Stormwater Management Commission	Emeric, N., U.S. EPA	Letter re: SMC's Comments on the November 1997 Fact Sheet for the Vacant Lot Site	1
12	12/03/97	Baratta, R., Freeborn & Peters	Emeric, N., U.S. EPA	Letter re: Public Comments on the October 1997 EE/CA Report for the Vacant Lot Site w/Attachments	6

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
13	12/08/97	Lake, C., McBride, Baker & Coles	O'Grady, J., U.S. EPA	Letter Forwarding Fansteel's Outline of the EE/CA Work Plan for the Vulcan Louisville Smelting Company Site	6
14	02/09/98	O'Grady, J., U.S. EPA	Lake, C., McBride, Baker & Coles	Letter re: U.S. EPA's Comments on Fansteel's Outline of the EE/CA Work Plan for the Vacant Lot Site	4
15	02/23/98	Lake, C.; McBride, Baker & Coles	O'Grady, J., U.S. EPA	Letter Acknowledging U.S. EPA's Comments on Fansteel's Outline of the EE/CA Work Plan for the Vulcan Louisville Smelting Company Site and Commitment to Submit a Revised EE/CA Work Plan by April 15, 1998	1
			UPDATE #3 **APRIL 23, 1998**		
1	05/06/98	O'Grady, J., U.S. EPA	Muno, W., U.S. EPA	Action Memorandum: Request for a Non-Time-Critical Removal Action at the Vacant Lot Site (PORTIONS OF THIS DOCUMENT HAVE BEEN REDACTED)	60
			UPDATE #4 **JULY 10, 1998**		
1	05/29/98	Carney, W., U.S. EPA	Northern Trust Bank/ Lake Forest, IL	Letter re: General Notice of Potential Liability for the Vulcan Louisville Smelting Company Site	3
2	06/16/98	Baratta, R., *Freeborn & Peters*	Williams, D., U.S. EPA	Letter re: Northern Trust Bank/Lake Forest's Response to U.S. EPA's General Notice of Potential Liability for the Vulcan Louisville Smelting Company Site	2
			UPDATE #5 **SEPTEMBER 11, 1998**		
1	07/22/98	O'Grady, J., U.S. EPA	Royal, F., Lake County Stormwater Management Commission	Letter re: U.S. EPA's Request for Additional Information Concerning Possible Sources of Contaminated Sediments at Pettibone Creek	2

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
2	08/12/98	Royal, W., Lake County Stormwater Management Commission	O'Grady, J., U.S. EPA	Letter: SMC's Response to U.S. EPA's Request for Information Concerning Possible Sources of Contaminated Sediments at Pettibone Creek	16
3	08/15/98	O'Grady, J., U.S. EPA	Muno, W., U.S. EPA	Action Memorandum: Request for an Amendment to the Scope of the Response for the Non-Time-Critical Removal Action at the Vulcan Louisville Smelting Company (aka Vacant Lot) Site (PORTIONS OF THIS DOCUMENT HAVE BEEN REDACTED)	79

UPDATE #6
DECEMBER 1, 1998

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	12/14/98	O'Grady, J., U.S. EPA	Muno, W., U.S. EPA	Action Memorandum: Request for a Ceiling Increase for the Non-Time-Critical Removal Action at the Vulcan Louisville Smelting Company (aka Vacant Lot) Site (PORTIONS OF THIS DOCUMENT HAVE BEEN REDACTED)	88

UPDATE #7
JANUARY 12, 1999

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	10/25/99	OHM Remediation Services Corporation	U.S. Army Corps of Engineers/ Omaha District	Final Report: Removal of Lead and PCB Contaminated Soil at the Vacant Lot Site (APPENDICES A-L HAVE NOT BEEN COPIED FOR PHYSICAL INCLUSION INTO THE ADMINISTRATIVE RECORD: MAY BE VIEWED AT U.S. EPA REGION 5 SUPERFUND RECORDS CENTER)	48

UPDATE #8
OPERABLE UNIT #2

SEPTEMBER 5, 2000

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	12/29/97	Nagam, R., Ecology and Environment, Inc.	O'Grady, J., U.S. EPA	Memorandum re: E&E's Draft Comments on the Proposed Scope of Work for the Vulcan Louisville Smelting (Vacant Lot) Site	6
2	02/18/98	Great Lakes Analytical	U.S. EPA	Quality Assurance Program (Revision 5.7)	312
3	04/30/98	Carlson Environmental, Inc.	U.S. EPA	Site Investigation Work Plan for the Vacant Lot Site	216
4	04/15/98	Lake, C., *McBride, Baker & Coles*	O'Grady, J., U.S. EPA	Cover Letter re: Fansteel's Submission of the Revised Engineering Evaluation/Cost Analysis (EE/CA)Work Plan for the Vulcan Louisville Smelting Site	1
5	06/01/98	Baumann, A., U.S. EPA/ Health and Safety Manager	O'Grady, J., U.S. EPA	Memorandum re: Health and Safety Plan Review for the Fansteel North Chicago Site Investigation	3
6	06/05/98	Nagam, R., Ecology and Environment, Inc.	O'Grady, J., U.S. EPA	Memorandum re: E&E's Draft Comments on the Site Investigation Work Plan for the Vacant Lot/ Fansteel Site	6
7	07/13/98	Byvik, R., U.S. EPA/ Field Services Section	O'Grady, J., U.S. EPA	Memorandum re: FSS's Review of the Draft Quality Assurance Project Plan (QAPP) for the PRP-Lead Site Investigation (SI) Activities for the Fansteel Property	9
8	07/20/98	O'Grady, J., U.S. EPA	Lake, C., *McBride, Baker & Coles*	Letter re: U.S. EPA's Comments on the April 1998 Site Investigation Work Plan for the Fansteel Property	13

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
9	07/23/98	O'Grady, J., U.S. EPA	Karolyi, M., Carlson Environmental, Inc.	Cover Letter Transmitting the Quality Assurance Project Plan for the Fansteel Property	1
10	07/23/98	O'Grady, J., U.S. EPA	Karolyi, M., Carlson Environmental, Inc.	FAX Transmission re: List of Files Sent Electronically for the Fansteel, Inc. EE/CA Analysis	2
11	08/06/98	Lake, C., McBride, Baker & Coles	O'Grady, J., U.S. EPA	Letter re: Submission of Revisions to the Work Plan for the Vulcan Louisville Smelting Company Site	1
12	09/01/98	Benning, B., U.S. EPA	Distribution List	POLREP #1 for the Vulcan Louisville Smelting (Vacant Lot) Site	3
13	09/02/98	O'Grady, J., U.S. EPA	Karolyi, M., Carlson Environmental, Inc.	FAX Transmission re: Submittal Dates for the Fansteel EE/CA Work Plan and Quality Assurance Project Plan	2
14	09/18/98	Karolyi, M., Carlson Environmental, Inc.	O'Grady, J., U.S. EPA	FAX Transmission re: CEI's Response to U.S. EPA's July 20, 1998 Comments on the Site Investigation Work Plan for the Fansteel Property	3
15	09/18/98	Nolan, J., U.S. Army Corps of Engineers/ Omaha District	O'Grady, J., U.S. EPA	Fax Transmission re: Sampling Results for the Vulcan Louisville Smelting (Vacant Lot) Site	4
16	10/00/98	Carlson Environmental, Inc.	U.S. EPA	Site Health and Safety Plan (Revised Version 2.0) for the Vacant Lot Site	152
17	10/00/98	Carlson Environmental, Inc.	U.S. EPA	Site Investigation Work Plan (Revised Version 2.0) for the Vacant Lot Site	108
18	10/05/98	Benning, B., U.S. EPA	Distribution List	POLREP #2 for the Vacant Lot Site	4

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
19	10/05/98	Karolyi, M., Carlson Environmental, Inc.	O'Grady, J., U.S. EPA	Letter re: CEI's Response to U.S. EPA's July 20, 1998 Comments on the Site Investigation Work Plan for the Fansteel Property	11
20	10/06/98	Lake, C., *McBride, Baker & Coles*	O'Grady, J., U.S. EPA	Cover Letter Forwarding the Revised Site Investigation Work Plan for the Fansteel Property	1
21	10/30/98	Baumann, A., U.S. EPA/ Health and Safety Manager	O'Grady, J., U.S. EPA	Memorandum re: Comments on the Health and Safety Plan for the Fansteel Property	1
22	10/30/98	Nagam, R., Ecology & Environment Inc.	O'Grady, J., U.S. EPA	Memorandum re: E&E's Comments on CEI's Revised Site Investigation Work Plan for the Vacant Lot Site	2
23	11/03/98	O'Grady, J., U.S. EPA	Lake, C., *McBride, Baker & Coles*	Letter re: U.S. EPA's Comments on the Revised Versions 2.0 of the Site Health and Safety Plan and Site Investigation Work Plan for the Fansteel Facility	2
24	12/03/98	Gurvey, L., EMCO Chemical Distributors, Inc.	O'Grady, J., U.S. EPA	Letter re: Cost Estimates for the Vacant Lot Site w/ Attachment	2
25	12/14/98	Benning, B., U.S. EPA	Distribution List	POLREP #4 for the Vulcan Louisville Smelting (Vacant Lot) Site	4
26	01/27/99	Benning, B., U.S. EPA	Distribution List	POLREP #5 for the Vulcan Louisville Smelting (Vacant Lot) Site	4
27	02/23/99	O'Grady, J., U.S. EPA	Lake, C., *McBride, Baker & Coles*	Letter re: U.S. EPA's Follow Up to the November 3, 1998 Comments on the Revised Versions 2.0 to the Site Health and Safety Plan and Site Investigation Work Plan for the Fansteel Facility	1

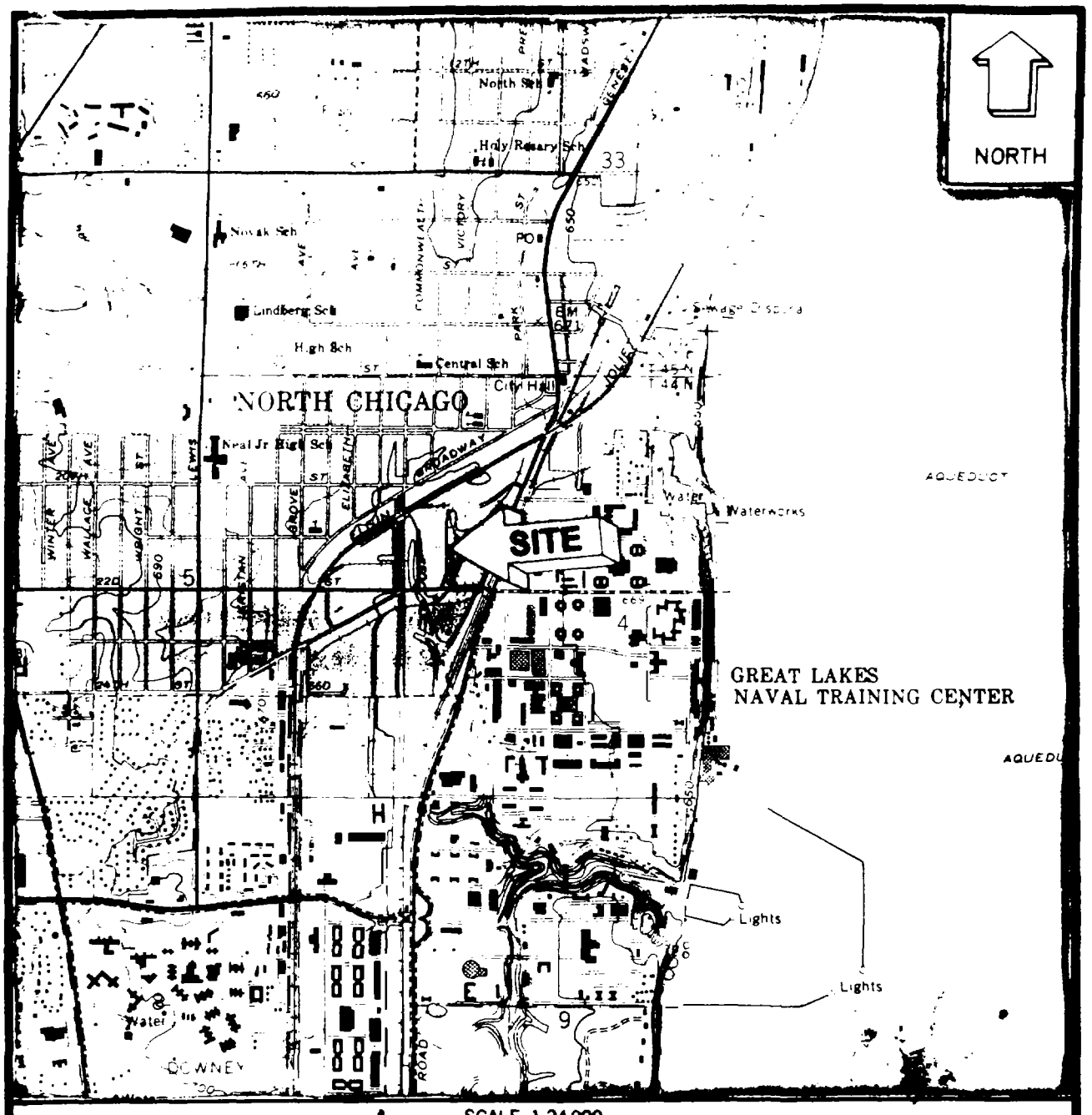
NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
28	03/16/99	Carlson Environmental, Inc.	U.S. EPA	Quality Assurance Project Plan (Revised Version 1) for the Vacant Lot Site	132
29	03/16/99	Carlson Environmental, Inc.	U.S. EPA	Supplement to Laboratory Quality Assurance Program	197
30	03/05/99	Byvik, R. U.S. EPA/ Field Services Section	O'Grady, J., U.S. EPA	Memorandum re: FSS' Review of the First Revision to the Quality Assurance Project Plan for the PRP-Lead Site Investigation Activities at the Fansteel Property	11
31	05/06/99	O'Grady, J., U.S. EPA	Lake, C., *McBride, Baker & Coles*	Letter re: U.S. EPA's Comments on the First Revision of the Quality Assurance Project Plan for the Fansteel Property	11
32	05/12/99	Steger, M. *McBride, Baker & Coles*	O'Grady, J., U.S. EPA	Letter re: Response to U.S. EPA's May 6, 1999 Letter Concerning the Quality Assurance Project Plan for the EE/CA for the Fansteel Property	1
33	05/28/99	Great Lakes Analytical	U.S. EPA	Standard Operating Procedure for the Digestion of Liquids for the Analysis of Metals (GLA 3015 BG: Revision 3.1)	171
34	06/07/99	Karolyi, M., Carlson Environmental, Inc.	O'Grady, J., U.S. EPA	Letter Transmitting Attached Revisions to Great Lakes Analytical's Standard Operating Procedures	112
35	06/07/99	Karolyi, M., Carlson Environmental, Inc.	O'Grady, J., U.S. EPA	Letter Transmitting Attached Revisions to the Quality Assurance Project Plan for the Vacant Lot Site	60
36	07/07/99	Benning, B., U.S. EPA	Distribution List	POLREP #6 and Final for the Vulcan Louisville Smelting (Vacant Lot) Site	3

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
37	07/13/99	O'Grady, J., U.S. EPA	Jeep, J., EMCO Chemical Distributors, Inc.	Fax Transmission re: IT Corporation's Comments on U.S Army Corps of Engineers' Request for a Technical Memorandum for the Vacant Lot Site	6
38	07/23/99	Karolyi, M., Carlson Environmental, Inc.	O'Grady, J., U.S. EPA	Cover Letter Transmitting Final Plan Documents for the Fansteel Property	2
39	08/19/99	Byvik, R., U.S. EPA/ Field Services Section	O'Grady, J., U.S. EPA	Memorandum re: FSS' Comments on the Second Revision to the Quality Assurance Project Plan for the Fansteel Property	2
40	02/23/00	O'Grady, J., U.S. EPA	File	Notes re: February 23, 2000 Meeting with Representatives from Fansteel and Carlson Environmental	4
41	02/25/00	O'Grady, J., U.S. EPA	Karolyi, M., Carlson Environmental, Inc.	Letter re: U.S. EPA's Notice of Approval of the Site Investigation Work Plan for the Fansteel Facility	5
42	03/02/00	Karolyi, M., Carlson Environmental, Inc.	O'Grady, J., U.S. EPA	Letter re: Notification of Field Dates for the Fansteel Property	1
43	05/02/00	Jeep, J., EMCO Chemical Distributors, Inc.	O'Grady, J., U.S. EPA	Fax Transmission re: Site Investigation Work Plan for the Fansteel Property	3
44	06/07/00	O'Grady, J., U.S. EPA	Polen, E., EMCO Chemical Distributors, Inc.	Letter re: EMCO's Upcoming Activities at the Vacant Lot Site	1
45	07/13/00	O'Grady, J., U.S. EPA	File	Memorandum re: Status of Fansteel Engineering Evaluation/Cost Analysis for Operable Unit 01 at the Vulcan Louisville Smelting Company (Vacant Lot Site)	3

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
46	08/01/00	Muno, W., U.S. EPA	Jeep, J., EMCO Waste Services, Inc.	Letter Transmitting the Prospective Purchaser Agreement re: the Vacant Lot Site	18
47	08/01/00	Muno, W., U.S. EPA	Baratta, F., *Freeborn & Peters*	Letter Transmitting the De Minimis Settlement Order re: the Vacant Lot Site	16

ATTACHMENT B

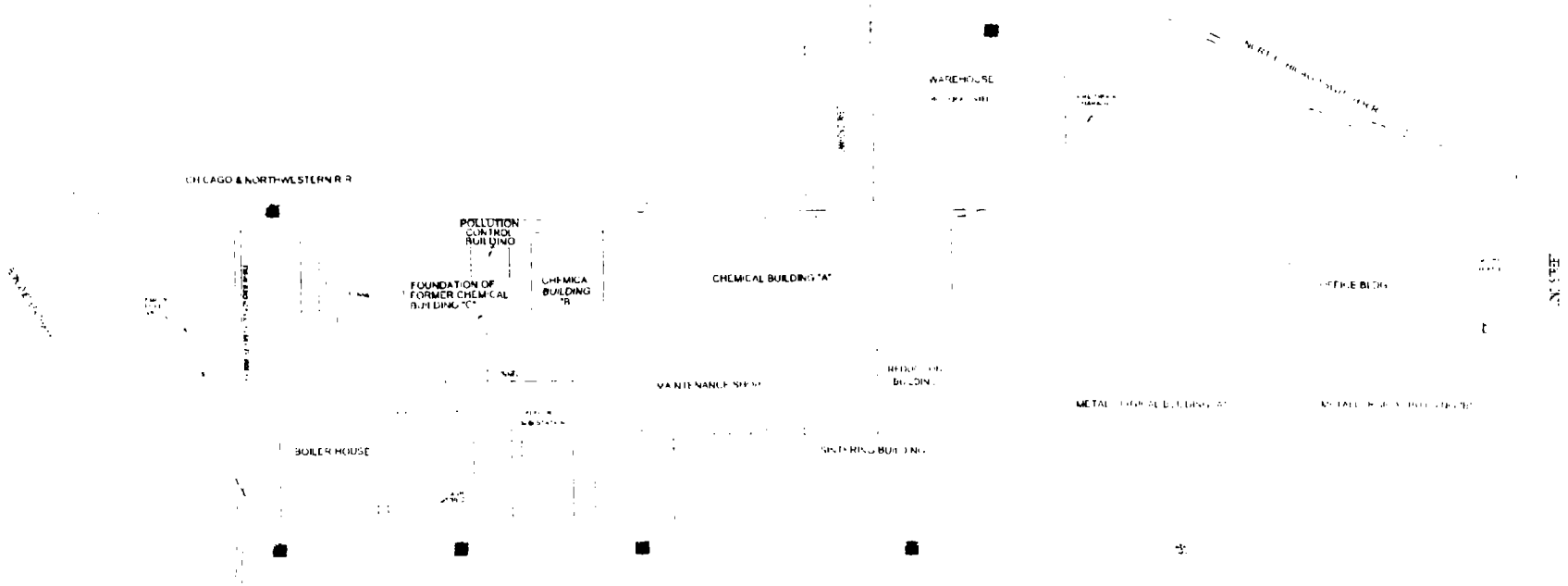
SITE MAPS



CARLSON ENVIRONMENTAL, Inc.
312 West Randolph Street
Chicago, Illinois 60606
(312) 346-2140

FIGURE ONE
SITE LOCATION

Developed from U.S.G.S. 7.5 Minute
Topographic Quadrangle Map referenced in Text



NOTE:
THIS FIGURE IS BASED ON A DRAWING PREPARED BY FACTORY INSURANCE ASSOCIATION AND DATED 2/9/60.

LEGEND:

- PROPOSED SOIL BORING LOCATION
- ■ PROPOSED MONITORING WELL LOCATION

SCALE:

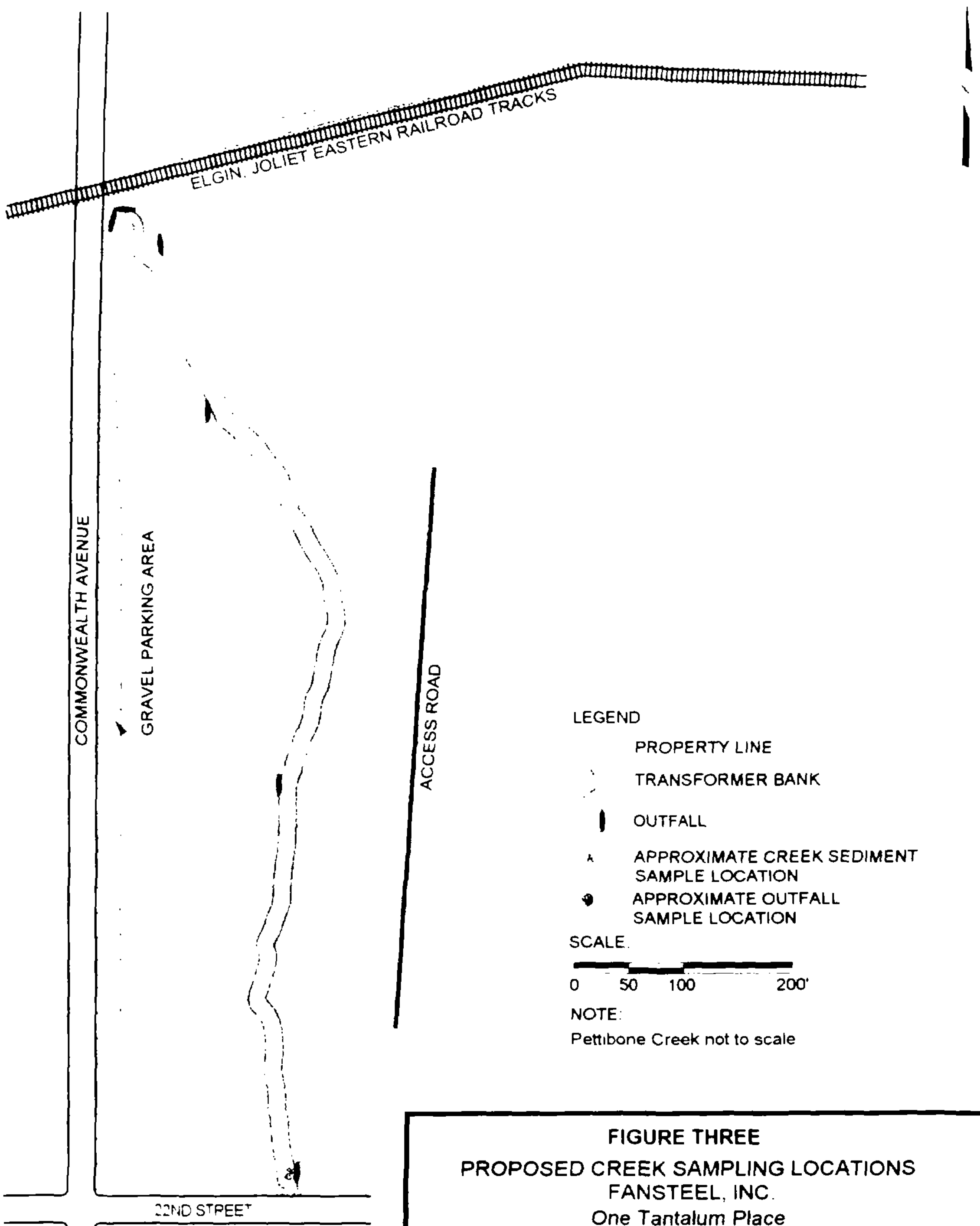
0 50 100 200'

FIGURE TWO

PROPOSED SITE SAMPLING LOCATIONS
FANSTEEL, INC
One Tantalum Place
North Chicago, Illinois

CARLSON ENVIRONMENTAL, INC.

P:\95\9566A\FIGS\CALEDRW.dc



NOTE

Three additional creek sediment sample locations are planned south of 22nd Street. Refer to Section 4.2.3.

FIGURE THREE

PROPOSED CREEK SAMPLING LOCATIONS

FANSTEEL, INC.

One Tantalum Place

North Chicago, Illinois

CARLSON ENVIRONMENTAL, INC.

312 W. RANDOLPH STREET
CHICAGO, ILLINOIS
(312) 346-2140

DRW	JLV
PN	9566
DATE	04-02-98
SCALE	None

ATTACHMENT C

LIABILITY FILE INDEX

LIABILITY FILE INDEX

1. EE/CA Report for the Vacant Lot Site

2. Fansteel Site Investigation Workplan

3. Fansteel RCRA Part B Permit Application